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ENVIRONMENTAL STATUS OF THE LAKE MICHIGAN REGION

VOLUME 14. BIRDS OF THE LAKE MICHIGAN DRAINAGE BASIN

GEORGE J. WALLACE

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ARGONNE NATIONAL LABORATORY, ARGONNE, ILLINOIS

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ENVIRONMENTAL STATUS OF THE LAKE MICHIGAN REGION

Volume 14. Birds of the Lake Michigan Drainage Basin

by

George J. Wallace*

Consultant to
Division of Environmental Impact Studies

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*Professor Emeritus, Michigan State University, East Lansing
Present Address: Rt. 1, Box 1638, Grayling, Michigan 49738

ENVIRONMENTAL STATUS OF THE LAKE MICHIGAN REGION

PROJECT DIRECTOR

D. L. McGregor

DEPUTY PROJECT DIRECTOR

W. S. White

EDITORIAL STAFF

D. L. McGregor
W. S. White
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ARGONNE NATIONAL LABORATORY REPORT SERIES ANL/ES-40

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PREFACE

Assessments of the environmental impacts of individual nuclear power plants sited on the shores of Lake Michigan have led to increased recognition of the need for regional considerations of the environmental impacts of various human activities, and a compendium of information on the environmental status of the region for use in assessing such impacts. In response to these needs, a report series describing the status of Lake Michigan and its watershed is in preparation. This series is entitled "Environmental Status of the Lake Michigan Region"; this report is part of that series.

The report series provides a reasonably comprehensive descriptive review and analysis of natural features and characteristics, as well as past, present, and proposed natural processes and human activities that influence the environmental conditions of Lake Michigan, its watershed, and certain adjacent metropolitan areas. This series will constitute a regional reference document useful both to scientific investigators and to other persons involved in environmental protection, resource planning, and management. In these regards, the "Environmental Status of the Lake Michigan Region" will serve in part as an adjunct to reports of broader scope, such as the Great Lakes Basin Commission's Framework Study.

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ENVIRONMENTAL STATUS OF THE LAKE MICHIGAN REGION

VOL. 14. BIRDS OF THE LAKE MICHIGAN DRAINAGE BASIN

by

George J. Wallace

Abstract

This report characterizes the birdlife found in 100 counties of the four states peripheral to Lake Michigan. It discusses major habitats--the Lake Michigan shoreline, inland lakes, rivers and streams, marshes, fields and open spaces, and woodlots--and associates specific birds with habitats according to preferences for space and food. It also discusses the special attributes of state parks and lakeshores, refuges and sanctuaries, and other special areas which are attractive to avifauna. Patterns of historical occurrence and abundance, and the influence of pesticides and pollution, disease, and hunting pressure are explored to place present occurrence in a modern perspective. Migration patterns--diurnal and nocturnal migrants, the major geographic pathways, the physical and physiological impetus, and some man-made obstacles to migration--are discussed to explain increases and decreases which occur in nonresident avifauna of the Basin.

The distribution and habits of birds that occur regularly in the Basin are described in an annotated list; a more complete list is presented in a table which encapsulates data for rapid and convenient reference. Separate sections deal with extinct, extirpated, and introduced species, and with endangered, threatened, and declining species.

INTRODUCTION

The Lake Michigan Drainage Basin (which comprises 55 counties in Michigan, 33 in Wisconsin, 3 in Illinois, and 9 in Indiana) supports a great variety of birds: waterfowl, game birds, raptorial birds, marsh birds, shorebirds, and many songbirds. Approximately 360 species have been recorded in the watershed during the past century; however, many of these are rare and have extremely localized distributions, or are of accidental occurrence in the Basin. At least 264 species occur regularly in the Basin, either as permanent or summer residents, or as transients. A small number of species ($\sim$ 15) are winter residents or visitors. Many others are accidentals or stragglers, some having been recorded only a few times during the past century; these will not be

treated in this report since their occurrence may not be significant to an assessment of man's future development of basin resources.

Birds of the Lake Michigan Drainage Basin are widely distributed in a great variety of habitats. The following account describes these habitats and some of the birds characteristic of each habitat, the birds' seasonal and numerical status in the Basin, migration patterns, prevailing food habits and economic considerations, and the birds' prospects for the future. An annotated list gives the major species occurring in the Basin, with a brief summary of status and economic importance. Following this list is a table that includes all species of regular, and some species of irregular or rare, occurrence in the Basin. Scientific names follow the American Ornithologists' Union checklist (Am. Ornithol. Union, 1957) and the 32nd and 33rd supplements (Am. Ornithol. Union, 1973a, 1973b, 1976). Specialized terms are defined in the Appendix.

MAJOR HABITATS AND ASSOCIATED AVIFAUNA

LAKE MICHIGAN SHORELINES

Most birds common to Lake Michigan are concentrated along the shore or on islands in the Lake. A few, such as gulls and certain ducks, range far out over the Lake but feed mostly in shallow water and are dependent on land for nesting.

Waterfowl (ducks, geese, and swans) are prominent inhabitants of this area. Oldsquaws (*Clangula hyemalis*), which winter in large numbers around the southern shores of Lake Michigan, are deep divers, feeding on mollusks and crustaceans. Often they become entangled in fishermen's nets, creating a nuisance to commercial fishermen. Goldeneyes (*Bucephala clangula*) and buffleheads (*Bucephala albeola*) also feed heavily on invertebrates, especially in winter. Both goldeneyes and buffleheads might be seriously affected by lake alterations that would decrease their food supply (Cottam, 1939). Common transients in the Basin, these birds often linger for weeks in the spring and fall, with some remaining over winter.

By contrast, the three mergansers occurring on the Lake are primarily fish eaters. The common merganser (*Mergus merganser*) sometimes becomes a serious predator on trout when freezing lakes force it into open trout streams to feed (Salyer and Lagler, 1940). More commonly, however, all three mergansers feed on forage fish (Salyer and Lagler, 1940), possibly improving game-fish populations by culling out undesirable species (Elder and Kirkpatrick, 1952).

More important from the sportsman's standpoint are the five species of freshwater diving ducks, or pochards, belonging to the genus *Aythya* (see Annotated List and Table 4 for discussion of individual species). These pochards feed largely on aquatic vegetation and are excellent game birds. Scaup (10% greater scaup and 90% lesser scaup in Michigan) are the most abundant transient ducks in the Basin, sometimes occurring in tremendous flocks in spring and fall; however, the more palatable canvasbacks (*Aythya valisineria*) and redheads (*Aythya americana*) are now scarce enough to justify closed seasons on them at times. Pochards inhabit the larger inland lakes as well as Lake Michigan, but surface-feeding or dabbling ducks (eight species), are more common in inland waters and might more properly be treated in the discussion

of fluviatile habitats. Needless to say, all ducks in the Basin are important to sportsmen as well as to the various state and federal agencies involved in waterfowl management.

Two swan and one goose species occur in the Basin. This excludes the extirpated trumpeter swan (*Olor buccinator*) which disappeared from the Great Lakes in the 1800's, and the snow (blue) goose (now regarded as one species, *Chen caerulescens*) which usually passes over the area without stopping during migration from the Arctic to the Gulf Coast. The mute swan (*Cygnus olor*) was introduced about 20 years ago on the Jordan River, Charlevoix County, Michigan, where it became established and prospered. At present, winter flocks of several hundred mute swans move into Grand Traverse Bay for winter and must be fed, at private or public expense, to permit them to survive in such large numbers. However, these birds are a great tourist attraction and may merit the expense for feeding. Native whistling swans (*Olor columbianus*), wintering mainly on the Atlantic Coast and breeding in northern Canada and Alaska, pass over the Basin in large numbers in spring and fall, often stopping on large lakes or flooded meadows in spring. Swans are almost exclusively herbivorous, uprooting aquatic plants for seeds, tubers, and stems.

Canada geese (*Branta canadensis*) are the only common wild geese in the Basin. Nearly all breeding geese in the Basin are stocked birds or offspring of stocked birds; strictly wild Canada geese nest only in the Arctic. Local and migrant geese are important to game divisions, sportsmen, and sightseers--particularly at concentration points like Allegan State Game Area and W. K. Kellogg Bird Sanctuary in Michigan, and Horicon Wildlife Refuge in Wisconsin. At the latter refuge, they sometimes cause problems by foraging excessively on agricultural lands. Table 1 shows the sizable waterfowl harvest at Allegan.

Table 1. Waterfowl Harvest at Allegan State Game Area, Allegan County, Michigan, 1972-1973*

			Harvest			
	No. of Hunters		Ducks		Geese	
Area	1972	1973	1972	1973	1972	1973
High banks	3,112	3,251	11	8	575	874
Farm unit	8,246	8,734	500	484	420	653
Total	11,358	11,985	511	492	995	1,527

**Data from Michigan Department of Natural Resources (1974a).*

Among the most characteristic birds on Lake Michigan beaches are the shorebirds, about 30 species of plovers and sandpipers plus several gulls and terns. Most plovers and sandpipers are transients (six species remain to nest), but a variety of species may be present from April to June and from late June to October; hence their sojourn in the Basin is an extended one. The north shore of Lake Michigan, from St. Ignace to Escanaba, is a good place to see these shorebirds during the above-mentioned periods.

Shorebirds are scavengers, or "beachcombers," which feed on stranded animal matter washed up on the beaches, sometimes in windrows, by rising and receding waters. Presumably, beaches might become foul smelling and unsightly without the services of these birds. Obviously, the level and quality of shoreline water affect the food supply of these little "peeps" and are critical to their survival.

Gulls and terns along the lakeshore serve a similar function: they feed mainly on fish (dead or alive), and the gulls occasionally forage into adjacent fields for grasshoppers and organisms found in fresh-plowed earth. Flocks of gulls sometimes become a nuisance by defacing buildings, bridges, and docks with their droppings. Two of the gulls in the Basin, the herring (*Larus argentatus*) and the ringbill (*Larus delawarensis*), are abundant nesters on islands in northern Lake Michigan. Large nesting colonies occur on offshore islands uninhabited or sparsely populated by man. Recently, gulls have experienced reproductive failure apparently caused by accumulations of pesticides in their food. These accumulations result from runoff to surface waters from fruit orchards in both Michigan and Wisconsin (Ludwig and Tomoff, 1966; Keith, 1966; Hickey *et al.*, 1966).

Less common along the lakeshore and on the larger inland lakes are the loons and transient grebes. The common loon (*Gavia immer*, the only loon of regular occurrence in the Basin) is a fairly common migrant throughout the area and nests in the northern counties. Although common loons feed largely on fish, they rarely damage commercial or sport fisheries. They are expert divers and swimmers, navigating with great difficulty on land; therefore, they nest close to the water's edge or on muskrat or beaver lodges.

Only one transient grebe, the horned grebe (*Podiceps auritus*), is common along the lakeshore during migration. Grebes dive for fish, but feed on smaller fish in shallower waters and consume more invertebrates than do loons.

Recently, particularly in 1963 and 1964, there were heavy die-offs of loons, grebes, gulls, and some ducks along Lake Michigan shores. Studies indicate that Type E botulism was the principal cause (Fay *et al.*, 1965) (see also p. 26).

Passerine birds (songbirds) are widely dispersed in all habitats, but often the lakeshore is a convenient avenue of travel for both diurnal (swallows, crows, jays, blackbirds) and nocturnal (warblers, vireos, thrushes) migrants. Some hawks also seem to congregate along the lakeshore during migration, especially on the Wisconsin side. At Cedar Grove, Wisconsin, 29,061 hawks representing 17 species were banded between 1952 and 1957 (Mueller and Berger, 1961).

INLAND LAKES

Numerous large and small lakes dot the landscape throughout the Basin, providing for such recreational activities as fishing, boating, and swimming. Some of the same birds described above are also associated with inland lakes, but a few species more characteristic of inland waters are discussed below.

The freshwater diving ducks (pochards) mentioned above are particularly characteristic of inland lakes where communities of submerged plants and

associated invertebrates provide extensive food. The scaup are mixed feeders: the lesser scaup consumes approximately 60% animal and 40% vegetable matter, whereas the less common greater scaup reverses these percentages (Cottam, 1939). The canvasback, redhead, and ring-necked ducks are largely herbivorous, and hence are considered more palatable to human tastes than the scaup ducks. The canvasback, in particular, is a gourmet's delight because of its larger size and palatability. Associated with these ducks may be other transient ducks of similar herbivorous habits: pintails (*Anas acuta*), northern shovelers (*Anas clypeata*), American wigeons (*Anas americana*), and ruddy ducks (*Oxyura jamaicensis*).

The belted kingfisher (*Megaceryle alcyon*) is a familiar sight on most inland lakes but apparently is becoming less common--perhaps from pesticides, perhaps from understandable persecution at fish hatcheries where it preys on fingerling trout and other fry. The spotted sandpiper (*Actitis macularia*), one of the few sandpipers nesting in the Basin, is also a familiar sight on inland lakes with beaches.

RIVERS AND STREAMS

A variety of both land birds and water birds occurs in riparian habitats along large rivers and tributaries that flow into Lake Michigan. Most of the birds mentioned above invade the inland rivers more or less regularly. The surface-feeding ducks are characteristically found in streams. The resident black ducks (*Anas rubripes*) and mallards (*Anas platyrhynchos*) are the most common, but numerous blue-winged teals (*Anas discors*) and an occasional green-winged teal (*Anas crecca*) are associated with them. Like other surface-feeders, adult teals are chiefly herbivores, but the young glean insects from surface waters for several weeks before gradually converting to a vegetable diet (Martin and Uhler, 1939). Wood ducks (*Aix sponsa*) frequent more heavily wooded portions of rivers, nesting in natural cavities in large trees or in nest boxes provided for them by wildlife biologists and enthusiasts. The wood duck supplements its diet of aquatic plants with beechnuts and acorns in the fall; hence, woodlots of oak-hickory or beech-maple are of considerable importance in their management.

The ardeids--herons, egrets, and bitterns--are also prominent among the riparian inhabitants. Great blue herons (*Ardea herodias*) nest in colonies in wooded swamps along the rivers, or at a considerable distance from rivers when a streamside site is not available. The black-crowned night heron (*Nycticorax nycticorax*) was formerly found in similar habitats but is now rare (see section on Endangered, Threatened, and Declining Species, p. 91). The green heron (*Butorides striatus*) is more solitary and avoids competition with other fish-eating birds by occupying the smaller tributaries. Green herons occasionally resort to nearby pine or spruce plantations for nesting and become somewhat colonial. The egrets (several species) are more southern in distribution but frequently occur in the Basin as late summer visitors. The ardeids are primarily fish eaters but supplement this diet with other vertebrates such as frogs, snakes, mice, and sometimes moles (the star-nosed mole, *Condylura cristata*, is semi-aquatic).

The recent decline of ardeids in Michigan has prompted a survey of nesting colonies (Postupalsky, 1976--personal communication). The black-crowned night heron, in particular, is in danger; former colonies in Michigan, Ohio, and

Indiana dwindled or disappeared completely in the 1960's (Wallace, 1969) but have shown some recovery in Michigan in the 1970's (Michigan Audubon Society bird surveys). A small colony at Green Bay, Wisconsin, is still extant (Hine, 1975--personal communication).

Two other species are evoking much public concern because of their declining status: the bald eagle (*Haliaeetus leucocephalus*) and the osprey (*Pandion haliaetus*). Both feed on fish and nest in large, dead or dying trees. The Great Lakes states represent one of the last strongholds of these endangered species in the eastern United States. The chief causes of population declines are believed to be eggshell thinning, egg breakage, and defective embryos from a calcium deficiency in the females; but the loss of nest trees and illegal shooting cause additional decimation.

Eagles no longer nest in the southern half of Michigan's Lower Peninsula; in 1975, 88 pairs plus three single, unmated birds were located by a survey team in the northern parts of the state (Postupalsky, 1965-1972--unpublished). Status of the bald eagle in the Wisconsin part of the Basin is even more precarious; possibly one pair remains on the shores of Lake Michigan (Wis. Dep. Nat. Resour. Endangered Species Comm., 1975). If our national emblem fails to survive, we face the sad reality that modern civilization and the kind of birdlife symbolized by the bald eagle cannot coexist.

The osprey is faring a little better in the Great Lakes states, but its reproductive rate is inadequate to maintain a stable population in either Michigan (Postupalsky, 1965-1972--unpublished) or Wisconsin (Wis. Dep. Nat. Resour. Endangered Species Comm., 1975).

An unusual bird occurring along smaller tributaries in the southern part of the Basin is the Louisiana waterthrush (*Seiurus motacilla*). It is one of the earliest warblers to arrive and is the earliest nester. Eaton (1958) determined that early nesting along swift-flowing streams is an adaptation to take advantage of the emergence of stoneflies and mayflies at the time when young waterthrushes require abundant food.

MARSHES

Marshes, often but not necessarily associated with river bottomlands, are probably the richest avian habitats in the Basin, having the greatest density (breeding pairs per acre) of birdlife. Blackbirds and rails, for instance (see below), often occur in dense concentrations in marshes. Most of the surface-feeding ducks mentioned above feed and nest in or around the marshes, particularly if water levels are adequate. The pied-billed grebe (*Podilymbus podiceps*) nests in potholes and marshes with sufficient water for the grebe's floating, water-soaked nest and copulation platforms.

Among the ardeids, the American bittern (*Botaurus lentiginosus*) and least bittern (*Ixobrychus exilis*) are marsh dwellers; the former builds a ground nest, whereas the latter builds a platform nest supported by reed stems, such that unequal growth of the stems sometimes tilts the nest and spills the contents. Both are primarily carnivorous, feeding on small vertebrates and large invertebrates.

Rails, gallinules, and coots are also prominent, though inconspicuous, inhabitants of marshes. The coots range out into the open waters to feed, where they compete to some extent with ducks. Rails and gallinules utilize dense marsh vegetation for feeding and nesting, seldom coming into human view. Rallids are omnivorous, but diets vary considerably. Coots are predominantly herbivorous, sometimes stealing plant foods from diving ducks which are better divers. The two common rails, the Virginia (*Rallus limicola*) and the sora (*Porzana carolina*), have a mixed diet of animal and plant material. The Virginia rail consumes about 62% animal matter and 38% seeds, and the sora eats 73% seeds and 27% invertebrates (Horak, 1970). Although these rails are seldom seen, nesting densities are high in suitable marshes; Berger (1951) found five nests of the Virginia rail and four of the sora on less than a half acre of marsh in Michigan.

Blackbirds reach high concentrations in marshes. Grain fields adjacent to the marshes are often raided by large flocks of post-nesting blackbirds during late summer and fall. Red-winged blackbirds (*Agelaius phoeniceus*) are the most abundant, but common grackles (*Quiscalus quiscula*)--more of a city or suburban bird--and the brown-headed cowbird (*Molothrus ater*)--a ubiquitous species--may be associated with them. Although generally beneficial because their diet is predominantly insectivorous in spring and early summer, blackbirds can become a detriment when the flocks feed on grain.

Common yellowthroats (*Geothlypis trichas*) and two wrens, the short-billed marsh wren (*Cistothorus platensis*) and the long-billed marsh wren (*Cistothorus palustris*), are less conspicuous but common summer residents in the marshes. The short-billed species is more of a wet-meadow bird, even nesting in dry alfalfa fields; the long-billed species inhabits dense cattails and sedges growing in water.

Unfortunately for birds and other animal life, marshes are considered expendable and are exploited for highway construction, real-estate developments, industrial expansion, and agriculture. Waste products of our civilization accumulate in marshes. However, as indicated above, marshes are rich in animal life. Because of their unique faunal and floral composition and their utilization as breeding grounds by species from nearby habitats, marshes must be preserved.

FIELDS AND OPEN SPACES

Farm fields formerly were prime habitats for meadow birds, but monocultural practices, mechanical harvesting, and overzealous insect and weed control have now eliminated or displaced many of the insectivorous birds (Wallace, 1970). Bobolinks (*Dolichonyx oryzivorus*), eastern meadowlarks (*Sturnella magna*) and sometimes western meadowlarks (*Sturnella neglecta*), and a variety of grassland sparrows are prominent among the field birds. Most sparrows are omnivorous (see Annotated List, p. 31); they feed their young on insects in spring and summer months but rely on seeds for food in fall and winter. Beal (1897), an economic ornithologist in the (former) U. S. Biological Survey, once calculated that wintering tree sparrows (*Spizella arborea*) in Iowa consumed 875 tons of weed seeds in one winter. Tree sparrows are common winter birds in the Basin. The horned lark (*Eremophila alpestris*), another common grassland bird, is present in the Basin in all seasons of the year. It, too, is omnivorous, consuming a mixed diet of seeds and insects.

WOODLOTS

Small woodlots and forests provide habitats for perhaps the greatest variety of birds in the Basin. Woodlands in various successional stages, from cut-over woodlots to climax forests of oak-hickory and beech-maple or pine, account for still greater diversity. Gray catbirds (*Dumetella carolinensis*), brown thrashers (*Toxostoma rufum*), rufous-sided towhees (*Pipilo erythrophthalmus*), indigo buntings (*Passerina cyanea*), song sparrows (*Melospiza melodia*), and many other species occupy the early successional shrub stages. More mature woodlands are occupied by still other birds too numerous to list individually in this report--hawks, owls, woodpeckers, flycatchers, thrushes, vireos, warblers, and some fringillids. Approximately 80 species nest in woodlots or forests in the Basin, while many others pass through during migration. Maintenance of both the successional and climax stages of woodlands is essential if we are to save large numbers of birds.

SPECIAL HABITAT AREAS

STATE PARKS AND LAKESHORES

The Basin is blessed with a variety of state parks and natural areas dedicated, at least ostensibly, to the preservation of unique habitats and their associated plant and animal life (Fig. 1). However, most of the state parks are overcrowded and inadequately financed, so that maintenance in even a seminatural condition is often a problem.

Several of the state parks, however, are ideally located for preservation of wildlife. Prominent among these is Wilderness State Park in northern Michigan. The park extends several miles into Lake Michigan and provides habitats for a variety of birds in dunes and conifer groves and along its shoreline. One of the few remaining nesting grounds of the piping plover (*Charadrius melodus*) in Michigan is along these shores. It is also one of the best places in Michigan for observing shorebirds during spring and fall migrations. Moreover, inland from shore are large stands of deciduous and coniferous forest penetrated by only a few foot trails, thus reducing visitor congestion and exploitation. Pileated woodpeckers (*Dryocopus pileatus*), winter wrens (*Troglodytes troglodytes*), and an interesting assortment of summer warblers are avian features of these areas.

Further down the shore of Lake Michigan, the Sleeping Bear Dunes National Lakeshore (if not overdeveloped) promises to fulfill its intended mission of preserving a unique national resource. It possesses spectacular sand dunes plus portions of beautiful Glen Lake and South Manitou Island, the latter supporting one of the largest herring gull colonies in the Great Lakes.

Still further south, Ludington and Muskegon state parks provide smaller dunes and popular beaches. The bald eagle formerly nested in Muskegon State Park, but disappeared years ago. The piping plover no longer nests in either Muskegon or Ludington state parks, probably as a result of too much disturbance during the nesting season.

Warren Dunes State Park, in Berrien County, Michigan, provides another striking example of a dune formation, as does the Indiana Dunes State Park

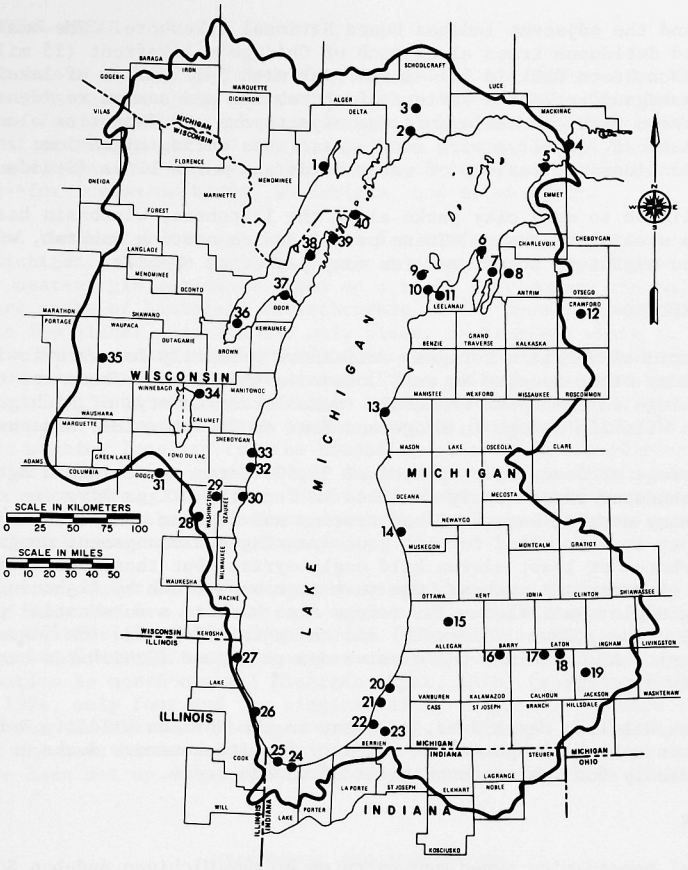

Fig. 1. Areas Within or Near the Lake Michigan Drainage Basin Which Support a Rich Avifauna.

1 Escanaba
2 Manistique (Riverbank Sanctuary)
3 Seney National Wildlife Refuge
4 St. Ignace
5 Wilderness State Park
6 Northport
7 Grand Traverse Bay
8 Torch Lake
9 South Manitou Island
10 Sleeping Bear Dunes National Lakeshore
11 Glen Lake
12 Hartwick Pines State Park
13 Ludington State Park
14 Muskegon State Park
15 Allegan State Game Area
16 W. K. Kellogg Bird Sanctuary
17 B. W. Baker Sanctuary
18 Vorhees Sanctuary
19 Haehnle Sanctuary
20 Sarett Nature Center
21 Grand Mere Woods
22 Warren Dunes State Park
23 Warren Woods
24 Indiana Dunes State Park
25 Indiana Dunes National Lakeshore
26 Chicago Lakefront
27 Illinois Beach State Park
28 Pike Lake State Park
29 Lizard Mounds State Park
30 Harrington Beach State Park
31 Horicon National Wildlife Refuge and State Wildlife Area
32 Terry Andrae State Park
33 John M. Kohler State Park
34 High Cliff State Park
35 Hartman's Creek State Park
36 Green Bay
37 Potawatomi State Park
38 Peninsula State Park
39 Newport State Park
40 Rock Island State Park

near Gary and the adjacent Indiana Dunes National Lakeshore. The small dunes, lagoons, and deciduous trees along much of Chicago's lakefront (25 miles*) and Illinois Beach State Park (a 1114-acre* park with 3-1/2 miles of lakefront just north of Waukegan) attract a variety of shorebirds and summer resident songbirds. Jackson Park, an oasis amid the skyscrapers and factories along the Chicago lakefront, is *alive* with small passerines during migration; its lagoons support a considerable variety of water birds and marsh birds (Stoddard, 1969).

In addition to many city parks along the lakeshore, Wisconsin has eleven state parks within the Basin. These parks provide nesting habitat, wintering grounds, and migratory stop areas for many passerine species.

WILDLIFE REFUGES

Two national wildlife refuges, well-known primarily for waterfowl but harboring many other species as well, occur in the Basin. These are the Seney Wildlife Refuge in the Upper Peninsula (Schoolcraft County) of Michigan, and the Horicon Wildlife Refuge in Dodge and Fond du Lac counties, Wisconsin.

The refuge at Seney is comprised of 95,500 acres of reclaimed agricultural land. An abundant water supply is diked in from the Driggs River to create pools for many nesting waterfowl and resting and feeding places for migrant ducks. Seney is also noted for its goose-rearing and management programs. Once it harbored at least eleven bald eagle eyries, but these have dwindled to one or two of uncertain status. One nest tree was struck by lightning, and the sitting eagle was killed. The refuge also harbors a substantial population of sandhill cranes (*Grus canadensis*) and sharp-tailed grouse (*Pedioecetes phasianellus*). At one time, the elusive spruce grouse (*Canachites canadensis*) inhabited this refuge.

Horicon Wildlife Marsh Area, adjacent to the Horicon Wildlife Refuge in Wisconsin, is a hunter's paradise--not only for its numerous ducks in fall, but particularly for its concentrations of Canada geese.

SANCTUARIES

Several sanctuaries owned and operated by the Michigan Audubon Society are located in the Basin. The Bernard W. Baker Sanctuary in Calhoun County is best known; it is set aside mainly for sandhill cranes, which remain one of the main attractions. The Big Marsh subsequently developed on the sanctuary provides excellent habitat for waterfowl and marsh birds, and the surrounding woods harbor many songbirds. Another Audubon sanctuary, Haehnle, in Jackson County, also harbors many sandhill cranes.

Other Audubon sanctuaries are the Riverbank Sanctuary (undeveloped) near Manistique in the Upper Peninsula; the Voorhees Sanctuary in Calhoun County, a 687-acre tract of woods notable for its spring wild flowers; and the Sarett Nature Center, a 175-acre tract on the Paw Paw River. The several sanctuaries in Indiana and Illinois are not in the Basin.

**Metric conversions: 1 mile = 1.6093 kilometers; 1 acre = 0.4047 hectare.*

OTHER SPECIAL AREAS

Other areas of Lake Michigan that are of special interest to bird enthusiasts include points along the northern shore of the Lake from Escanaba to St. Ignace--for shorebirds; the more remote islands--harboring great concentrations of nesting gulls and terns; the Dead Stream Area in Michigan (Michelson's)--for its ospreys, bald eagles, herons, and water birds; and Green Bay--for its water birds, shorebirds, and marsh birds.

One of the best-known special areas for birders is Warren Woods in Berrien County, Michigan. Though small in size, it preserves a magnificent stand of virgin or near-virgin deciduous trees on a bluff overlooking the Galien River. One or more pairs of Louisiana waterthrushes can be found along this river--one of the few places, perhaps the only place, in Michigan where it breeds regularly. Prothonotary warblers (*Protonotaria citrea*), yellow-breasted chats (*Icteria virens*), and white-eyed vireos (*Vireo griseus*)--all southern species barely extending into southern Michigan and Wisconsin--are also often found here. The woods above the river provide what is perhaps Michigan's most dependable nesting locality for the hooded warbler (*Wilsonia citrina*). Cerulean warblers (*Dendroica cerulea*) and acadian flycatchers (*Empidonax virescens*) are also common here. Grand Mere Woods, at Stevensville in Berrien County, also harbors most of these southern species, but it is privately owned and threatened with commercial development.

Of special interest are management areas that have been set up in Michigan to try and save the few survivors of one of the world's rarest birds, the Kirtland's warbler (*Dendroica kirtlandii*). The 1975 nesting population--fewer than 400 birds (179 singing males counted)--was concentrated mainly in three counties in north-central Michigan (Ryel, 1976) (see also Table 6). In 1973 and 1974, only four and two singing males, respectively, were found in Wexford County in the Lake Michigan watershed. Although the two counties harboring the most birds are in the Lake Huron watershed, several management areas have been set up as prospective future sites in the Lake Michigan Drainage Basin.

HISTORICAL CONSIDERATIONS

EARLY HISTORY

The most dramatic and shameful change in the birdlife of the Basin was the extinction of the passenger pigeon (*Ectopistes migratorius*) in the late 1800's. This bird was once so numerous that it probably outnumbered any other species in North America and undoubtedly outnumbered all other Michigan-Wisconsin species combined. The largest known pigeonry in North America, a nesting area 100 miles long, was in Wisconsin (Schorger, 1955). Second largest was the well-known Petoskey, Michigan, nesting site stretching along the lakeshore for 44 miles and inland 3 to 10 miles. Trees were so heavily loaded with nests and roosting birds that they often crashed to the ground. Such a set-up was a bonanza for hunters--they came in hordes, shot and clubbed the birds, robbed nests of squabs, burned them out of trees, and at the end of the day drove their hogs into the woods to fatten on the remains. In 1861, 14,850,000 birds were taken from this one nest site and shipped in barrels to markets in Chicago and New York (Schorger, 1955). An Indian hunter (the local

champion) at Northport, Michigan, claimed he would go out every morning before breakfast and shoot 1000-1200 birds while his family gathered them up in clothes baskets as fast as they fell. Then he would call it quits while other hunters continued shooting throughout the day (Wilson, 1969). The birds sold for 10 cents a dozen, or only 5 cents when the market was glutted. Of course, the birds could not long withstand such pressure. The last specimens were shot in Michigan in 1898 and in Wisconsin in 1899. "Martha," the last of the species, died in the Cincinnati Zoo in 1914 after living in captivity for 29 years. Now the bird is commemorated in books, museums, and an appropriate monument at Wyalusing State Park in Wisconsin (Schorger, 1955; Wallace and Mahan, 1975).

The history of the steadily declining prairie chicken (*Tympanuchus cupido*) is quite different from that of the passenger pigeon. Concerted efforts by the Michigan and Wisconsin Departments of Natural Resources and other agencies have been made to try and save this bird, but it continues to show an overall decline. In Michigan, the bird increased in numbers with clearing of the land between 1910 and 1930, but dwindled rapidly thereafter. By 1956, all populations south of the Saginaw-Muskegon line had disappeared, and all of those in the Upper Peninsula--including a remnant at the Seney Wildlife Refuge--were gone except for a group near Sault Ste. Marie (Ammann, 1952). By 1966, wildlife biologists could find only 66 males in six counties, and in 1973, only one sizable colony and scattered individuals remained in the entire state. In central Wisconsin, where more prairie-type land is available, the birds are faring a little better (Hamerstrom and Hamerstrom, 1973). More than 10,000 acres of grasslands have been purchased in the Buena Vista Marsh in Portage County, where the birds are intensively managed (Wis. Dep. Nat. Resour. Endangered Species Comm., 1975). Intensive management shows some progress in perpetuating the prairie chicken in Wisconsin.

A dramatic event in the past history of both Michigan and Wisconsin was the almost total leveling, due to lumbering, of the magnificent stands of white and red pine (*Pinus strobus* and *Pinus resinosus*). In Michigan, large stands of virgin trees survive only in Hartwick Pines State Park in Crawford County and in The Estivant Pines (in part, privately owned) in Keweenaw County, both outside the Lake Michigan watershed. The net result of lumbering was millions of acres of cleared and, for the most part, barren and desolate lands. However, new growth has reclothed much of the cut-over land not used for agriculture, and reforestation programs have restored some of our lost heritage. Many forest birds decreased during and following the rape of the land, but fortunately none were entirely exterminated; some, such as the pileated woodpecker, have staged a comeback.

Clearing of the land produced other changes in birdlife. The wild turkey (*Meleagris gallopavo*) disappeared completely but, fortunately, it has been reintroduced. Many birds benefited from the changes. Robins, swallows, doves, and other species closely associated with man actually increased, especially in earlier days when birds and farming were considered complementary, one aiding the other. However, modern agriculture, industrial expansion, and urban growth have greatly altered the distributional and numerical status of most birds.

PESTICIDES AND POLLUTION

The unremitting use of herbicides and pesticides, the production of almost uncontrollable animal and industrial wastes, and the contamination of waterways have introduced other very complex factors into our association with the land. Many books have been written on current environmental problems (Adams, 1970; Commoner, 1963; Darling and Milton, 1966; Ward and Dubos, 1973). A few factors that have affected birdlife in the Lake Michigan Drainage Basin are briefly discussed below.

Post-World War II initiated a new way of life for many Americans. The use of pesticides, particularly DDT, became a *must* on the farm, in the forests, in the suburbs, and around the home grounds. Designed to increase food production, control forest insect pests, protect elms from Dutch elm disease, eliminate mosquitos, and cure many other real and imaginary ills, DDT is everywhere--in the air, soil, and water on which we depend for life. According to biologists of the U. S. Fish and Wildlife Service, probably no living thing on earth--plant or animal--is entirely free of DDT. Despite restrictions on current use, it persists in the environment, albeit in decreasing and possibly harmless amounts.

The effects on birds have been calamitous. Largely because of DDT, peregrine falcons are extinct as breeding birds everywhere east of the Rocky Mountains; bald eagles and ospreys have declined severely in numbers; and many other predatory and fish-eating birds may already be beyond the point of no return (Hickey, 1969).

Robins were virtually eliminated in communities conducting unremitting campaigns against Dutch elm disease (Wallace *et al.*, 1961). Although apparently doing well in some areas (they range from Alaska to Mexico and from Maine to California), in other cases robins have not returned to former population levels long after cessation of the use of DDT. They have been replaced by grackles, starlings, sparrows, and other *nuisance* birds--possibly an irreversible change in species composition that cannot be rectified by the ban on DDT (Wallace, 1970).

Other persistent chemicals--including aldrin, dieldrin, heptachlor, *etc.*--have also been freely used, and more recently, mercury compounds and PCB's (polychlorinated biphenyls) have been found to be widespread (Stickel, 1974). Detection and effects of PCB's are hard to separate from DDT and its analogues. Detailed studies of the effects of PCB's on birds have not been made in the Lake Michigan Drainage Basin, but a report by Gilbertson (1974) showed the effects of PCB's on breeding gulls in Lake Ontario. Stickel (1972) gave a good summary of the accumulation and effects of PCB's on animal life, and Stendell (1976) summarized known effects on birds and mammals. Similarly, the accumulation of mercury compounds in birds, which often renders them unfit for human consumption, has not been studied intensively in the Basin; however, Stendell *et al.* (1976) assessed the levels of mercury in the eggs of several species of aquatic birds from Lake St. Clair, Michigan.

Most herbicides are nontoxic or mildly toxic to birds, but their widespread use has changed the vegetative composition and the status of birds in various habitats (Stickel, 1974). Pheasants, for instance, have been drastically reduced in and around cornfields where herbicides have eliminated the

weeds necessary for food and cover. Clean farming, elimination of fencerows, and methods of planting and harvesting have produced changes for the most part detrimental to birds. Currently, much controversy exists concerning the hazards associated with the use of herbicides, including 2,4,5-T. In Michigan and Wisconsin, 2,4,5-T has been banned for most users or is still under review (Southwick, 1974; Sterling, 1974).

Waterways in the Basin have become seriously polluted by discharge of wastes from manufacturing plants, by runoff of fertilizers and animal wastes from farms, and by runoff of pesticides everywhere. Lake Michigan is the ultimate deposition site for many of these products which move up the food chain through biological magnification. For example, studies by Hickey *et al.* (1966) in Green Bay, Wisconsin, revealed that (*i*) bottom sediments in the Bay averaged 0.014 parts per million (ppm) of DDT and its analogues, (*ii*) amphipods in the mud averaged 0.41 ppm, (*iii*) three species of fish ranged (averages) from 3.35 ppm in alewives to 5.60 in whitefish, and (*iv*) the body fat of 12 nesting herring gulls ranged from 1041 to 2441 ppm. Ludwig and Tomoff (1966) found a similar situation in the gulls in Grand Traverse Bay, and Keith (1966) measured the effects of DDT on herring gull reproduction. It is hoped that the current ban on most persistent pesticides will eventually diminish the contamination problem in Lake Michigan.

DISEASES

Diseases among animals are nothing new and possibly were a factor in the extinction of the dinosaurs 100 million years ago. Diseases help regulate animal populations. However, some diseases are created or aggravated by manipulation of the environment. Lead poisoning in ducks results from the ingestion of lead bullets that accumulate in heavily hunted waters (Bellrose, 1959). Thousands of ducks in the Mississippi Flyway, of which Lake Michigan is a part, die of lead poisoning every year. Many don't die directly from lead poisoning but succumb later from indirect effects such as anemia, decreased alertness, and other physical and physiological impairments. The situation may worsen as hunter pressure increases and hunting areas become more restricted. [Conversion to steel pellets would solve this problem, but ammunition manufacturers are reluctant to change over and will not change unless forced to do so. The U. S. Fish and Wildlife Service has been pushing for restriction in the use of lead (U. S. Dep. Inter. Fish Wildl. Serv., 1976b).]

In the mid-1960's, the northern, eastern, and southern shores of Lake Michigan experienced an unprecedented die-off of aquatic birds, mostly loons and smaller numbers of grebes and gulls. Thousands of dead and dying birds were washed ashore or perished in the Lake in the autumn months of 1963 and 1964 (Fay *et al.*, 1965). Hard-hit areas (in different autumns) were the southern lakeshore from Berrien County, Michigan, to Chicago; a widespread stretch of the eastern shore from Berrien County to Muskegon; and the northern shores between St. Ignace and Escanaba. Exhaustive investigations by personnel in the Game Division of the Michigan Department of Natural Resources and at Michigan State University eventually attributed the die-off to Type E botulism. Botulism is caused by a bacterium, *Clostridium botulinum*, which lives on decaying organic matter. Botulism in ducks in the West (Western duck sickness) has been known for a long time (Tinker, 1958), but the epidemic in Lake Michigan is believed to have been caused by a slightly different botulinum type (Fay *et al.*, 1965).

Other diseases common to birds in or out of the Basin are fowl cholera in ducks, trichomoniasis in doves and their avian predators, ulcerative enteritis in game birds, and ornithosis (transmissable to humans) in many birds (Herman, 1955). Most of these diseases have not been well documented from studies within the Basin.

In summary, it is evident that man has exerted a profound influence on the birdlife of the Basin by alteration of habitats; by direct extermination of certain forms; and by creation of conditions causing sharp decreases or displacements in insectivorous, fish-eating, and predatory birds, and increases in omnivorous and granivorous birds. Birdlife has benefited from some changes: the establishment of parks, sanctuaries, and refuges; restoration of deforested areas; management studies on game species; and the small but significant contributions of individual homeowners who create sanctuaries for birds on their home grounds.

HUNTING PRESSURE

The effects of hunting on various species of birds (*e.g.* the extinction of the passenger pigeon, the extirpation of the trumpeter swan, the decline of several species) have been detailed in other parts of this report. But little has been said about the current management of game species for hunting purposes. If carefully regulated, the harvest of upland game and waterfowl can be a continuing sport.

Figures are not available for the harvest of most game species in basin counties; such data are usually compiled on a statewide or regional basis. However, the number of small-game hunting licenses in Michigan and Wisconsin is compiled for each county; the number sold in 1973 for the 55 Michigan and 33 Wisconsin counties wholly or partly within the Basin is given in Table 2. These data indicate the hunting pressure, and variation thereof, in the different counties and dramatize the importance of small-game hunting in the Basin.

Table 1 gives the data for harvest of waterfowl at Allegan State Game Area (Allegan County, Michigan) during 1972 and 1973, and Table 3 presents the spring take of turkey gobblers for the seasons of 1973 to 1975. These data indicate the high value of waterfowl and turkeys in the Basin.

MIGRATION PATTERNS

More than 90% of the bird species in the Basin are migratory. Only a few (some game birds, some owls, some woodpeckers, titmice, cardinals, and house sparrows) are strictly sedentary. Certain species move only short distances from summer to winter homes (*e.g.* those that breed in the northern part of the Basin and winter in the southern part), whereas others travel long distances, even into the southern hemisphere (Wallace and Mahan, 1975).

DIURNAL AND NOCTURNAL MIGRANTS

Some birds are diurnal migrants, traveling and feeding in a leisurely manner. Aerial feeders such as swifts and swallows migrate by day, feeding while in flight. Starlings, some icterids (blackbirds), and many water birds

Table 2. Resident Small-Game License Sales in Basin Counties in Michigan and Wisconsin during 1973*

County	No. of Licenses	County	No. of Licenses	County	No. of Licenses
MICHIGAN		MICHIGAN (contd.)		WISCONSIN	
Alger	1,277	Luce	985	Adams	716
Allegan	6,748	Mackinac	1,621	Brown	7,785
Antrim	1,413	Manistee	2,386	Calumet	938
Baraga	1,069	Mason	2,219	Columbia	2,801
Barry	3,417	Marquette	7,709	Dodge	3,825
Benzie	1,104	Mecosta	3,283	Door	879
Berrien	14,153	Menominee	1,580	Florence	491
Branch	3,423	Missaukee	1,108	Fond du Lac	5,031
Calhoun	10,217	Montcalm	3,586	Forest	1,093
Cass	4,012	Muskegon	8,859	Green Lake	1,221
Charlevoix	1,488	Newaygo	3,719	Kenosha	4,811
Cheboygan	2,209	Oceana	2,035	Kewaunee	767
Clare	2,659	Osceola	2,041	Langlade	1,560
Clinton	4,310	Otsego	1,660	Manitowoc	3,634
Crawford	1,330	Ottawa	7,567	Marathon	5,385
Delta	3,394	Roscommon	2,531	Marinette	2,568
Dickinson	3,179	Schoolcraft	1,266	Marquette	690
Eaton	6,300	Shiawassee	5,794	Menominee	7
Emmet	2,036	St. Joseph	5,027	Milwaukee	25,307
Gogebic	2,405	Van Buren	6,322	Oconto	1,989
Grand Traverse	3,932	Washtenaw	11,560	Oneida	2,996
Gratiot	3,037	Wexford	2,953	Outagamie	5,449
Hillsdale	4,273			Ozaukee	1,871
Ingham	9,280			Portage	2,725
Ionia	4,540			Racine	6,682
Iron	2,104			Shawano	2,059
Jackson	9,360			Sheboygan	4,197
Kalamazoo	9,545			Vilas	1,269
Kalkaska	1,008			Washington	2,928
Kent	49,508			Waukesha	9,926
Lake	980			Waupaca	2,239
Leelanau	856			Waushara	1,172
Livingston	4,964			Winnebago	6,840

**Includes counties wholly or partly in the Lake Michigan Drainage Basin. Nonresident license sales in Michigan increased the total by ∿1%. Data from Michigan Department of Natural Resources (1974b).*

Table 3. Spring Turkey Kill (Gobblers Only) at Allegan State Game Area, Allegan County, Michigan, 1973-1975*

Year	No. Gobblers Taken
1973	36
1974	37
1975	28
Total	101

**An unknown number of turkeys were released at Allegan in 1954; these increased to about 700 birds in the next ten years. The first open season occurred 6-14 November 1965 when 82 birds were taken. Since 1970, fall populations have remained at about 400 birds. Data from Shick (1975--personal communication) and Janson (1975).*

are in part diurnal, progressing in large flocks that stop to rest and feed as conditions dictate. Diurnal hawk flights are also characteristic.

The majority of species in the Basin are nocturnal migrants, traveling a few hundred to a thousand or more miles in a single flight. Many species stop in favorable feeding areas for several days or weeks to replenish depleted fat reserves necessary for the next stage of the journey. Obviously, it is important that migrating birds have suitable shelter and adequate food along the migratory route. As indicated previously, many of the birds in the Basin are transients, moving to more northern breeding grounds in the spring and to southern wintering grounds in the fall. Some (*e.g.* snow geese) may pass through hurriedly, not stopping at all in some years; others may remain in the Basin until departure. That is, birds that breed in the northern extremes of Wisconsin or in the Upper Peninsula of Michigan may spend considerable time en route in the southern and central parts of the Basin in the spring, especially if spring is retarded.

In general, migration in the fall is more leisurely than in the spring. Spring migration in the northern states is largely concentrated in April (seed-eating species) and May (insect-eating species) with a peak in numbers from early to mid-May. Fall migration extends from July to November with no pronounced peaks; maximum movements (number of species involved) are in September. Some shorebirds breeding in the Arctic may reappear in the Basin before July; this occurs when either the male or female is not needed for rearing of the precocial young. Bobolinks, some swallows, and many warblers desert their breeding grounds soon after nesting and gradually move southward. In the post-nesting period, some birds (herons, egrets, eagles, barn owls) wander widely in all directions, often traveling northward before retracing their flights.

Weather-induced waves of migration in spring are largely lacking in the fall, possibly a result of the prevalence of more stable weather in late summer and fall.

The total number of migrating birds is greater in fall than spring, a result of young-of-the-year. Half or more of the birds participating in fall migration are immatures, many of which will not live to return. However, spring migration is more conspicuous because the males are in full song and in breeding plumage, whereas in the fall many are in drab colors and rarely sing.

MAJOR PATHWAYS

Birds migrate, to some extent, over a broad front so that there are really no birdless areas; however, it has long been known that there are areas of concentration during migration. The Great Lakes are a part of the Mississippi Flyway [probably the most heavily traveled of the four major flyways (Lincoln, 1950)]. Within the Mississippi Flyway, river valleys often serve as directional pathways or corridors (Bellrose, 1958); birds often follow the course of a river if it goes in the right direction, even deviating from a straight north-south line for short distances. Understandably, water birds often travel along the Lake Michigan shoreline; many land birds also follow this route. Hawks migrate along the lakeshore, taking advantage of thermal updrafts created by differences in temperatures over water and adjacent land. By contrast, the interior routes in Michigan and Wisconsin are much less

frequently traveled. Mountain ranges with their supporting updrafts, prevalent in the East and West, are lacking in the Basin.

PHYSICAL AND PHYSIOLOGICAL FACTORS

Migration patterns are strongly influenced by weather conditions. Although the urge to migrate is internal, being dependent on the physiological condition and development of the gonads, the weather often dictates timing and pattern of flight. Ducks are often delayed in their inherent urge to move northward in spring by confronting frozen lakes and streams; in the fall, freezing conditions may force them to abandon their northern habitats. Warm and cold fronts greatly affect the advancement of migrating birds. In the fall, they move south with fronts characterized by northwesterly winds (tail winds); in the spring, they advance north with southerly (warm) winds. Storms during migration have always been hazardous to birds. Sometimes storms eliminate large segments of a migrating population; many such disasters have been recorded in the past (Lack, 1960). However, most bird populations have a remarkable capacity for recovery from such losses, sometimes regaining former levels in a single season or, more often, within a few years.

MAN-MADE OBSTACLES TO MIGRATION

Although man has little control over weather conditions, he has unwittingly imposed many obstacles to migration. These include aircraft, tall buildings, monuments, high wires, and especially television towers and ceilometers (an automatic cloud-height indicator and detector system employing a fixed or rotating beam of light projected skyward). Tall buildings and monuments have always been a hazard to migrating birds, but in recent years, ceilometers and tall TV towers have created a new and alarming hazard. A TV tower at Eau Claire, Wisconsin, has caused some staggering kills: 200,000 birds on 20 September 1957, and 30,000 birds on 18 and 20 September (two nights) 1963 (Kemper, 1958, 1964). The heaviest recorded bird kills from TV towers in Michigan were at Okemos, Grand Rapids, and Cadillac (Caldwell and Wallace, 1966). Such casualties are usually heavier in the fall, and many of the victims are young-of-the-year. Fortunately, such mass mortality is quite infrequent; sometimes several seasons pass without significant kills. Strikes occur chiefly at the higher towers (1000 feet or more) or at somewhat lower towers where they are situated on an elevation. Birds normally migrate at elevations of 3000 feet or more, but descend to much lower altitudes on cloudy or foggy nights. At ceilometers, birds are attracted to the revolving or fixed beam of light and may follow a revolving light around until they become exhausted and crash to the ground. At TV towers, they strike the guy wires. Prospects for the future indicate more and higher towers. A permit has been granted for the addition of a 2000-foot tower about 25 miles from Eau Claire, Wisconsin, which presumably will cause even greater mortalities (Kemper, 1975--personal communication).

Overhead wires, increasingly dotting the landscape, usually pose only minor hazards to birds. Nocturnal migrants fly far above them, and diurnal migrants usually avoid them. Electrocution by high-tension wires occurs when contact is made with two wires simultaneously. Birds with a large wing span, such as eagles, sometimes attempt to fly between two wires and are electrocuted. Officials in some western states have recommended increasing the span between wires on power lines to minimize this problem.

Exception to the minor role played by overhead wires in killing or crippling birds sometimes occurs in duck marshes where concentrations of low-flying birds, constantly maneuvering around the marsh, seem unable to avoid striking such obstacles. Consequently, waterfowl managers have recommended the elimination of transmission lines over wildlife refuges.

ANNOTATED LIST OF BIRDS COMMON TO THE LAKE MICHIGAN DRAINAGE BASIN

The following list includes most bird species that occur regularly in the Lake Michigan Drainage Basin. A discussion of distribution, status, habitat, nesting habits, and diet is provided for most species; economic importance, aesthetic attributes, *etc.*, are commented upon for selected species. Some species are treated collectively (*e.g.* warblers, shorebirds). For brevity, a telegraphic style of writing is employed. Distributional data are from Zimmerman and Van Tyne (1959) and Gromme (1963); food habits data are taken in part from Bent (1919-1968).

A more complete list of birds of the Lake Michigan Drainage Basin is given in Table 4 at the end of this section.

ORDER GAVIIFORMES

GAVIIDAE - LOONS

Gavia immer (Brünnich). COMMON LOON.

Status and Distribution: Common transient. Regular summer resident in the northern parts of the Basin and in a few places in southern Michigan. A few winter around the southern rim of Lake Michigan.

Diet: Primarily fish, seldom including those of commerical importance. Suffered severe die-offs from botulism in the mid-1960's.

ORDER PODICIPEDIFORMES

PODICIPEDIDAE - GREBES

Podiceps auritus (Linnaeus). HORNED GREBE.

Status and Distribution: Transient, occasionally remaining over winter.

Habitat: Lake Michigan bays, coastal waters, and inland lakes.

Diet: Small fish, frogs, and the larger aquatic invertebrates.

Podilymbus podiceps (Linnaeus). PIED-BILLED GREBE.

Status and Distribution: Common summer resident. Rare winter resident in southeastern Wisconsin and southwestern Michigan.

Habitat: Shores of lakes, ponds, and potholes.

Diet: Fish, frogs, insects, and other invertebrates; sometimes seeds and the soft parts of aquatic plants. Ingestion of body feathers common (reason unknown or speculative).

ORDER PELECANIFORMES

PHALACROCORACIDAE - CORMORANTS

Phalacrocorax auritus (Lesson). DOUBLE-CRESTED CORMORANT.

Status and Distribution: Rare transient in the Basin. Four nesting colonies in Wisconsin where it is listed as an endangered species (Wis. Dep. Nat. Resour. Endangered Species Comm., 1975). Rarely nests in Michigan.

Diet: Predominantly fish and crustaceans (Martin *et al.*, 1951).

Comments: These birds have been persecuted by sportsmen and commercial fishermen due to the belief that cormorants feed extensively on desirable fish.

ORDER CICONIIFORMES

ARDEIDAE - HERONS, EGRETS, BITTERNS

Ardea herodias Linnaeus. GREAT BLUE HERON.

Status and Distribution: Summer resident, rare in winter.

Habits: Nests in colonies varying from a few to hundreds of nests in flooded swamps.

Diet: Fish, frogs, aquatic insects, and sometimes mice caught by foraging in meadows.

Comments: The belief that the great blue heron has declined in recent years has stimulated a survey of nesting colonies in the Great Lakes states. This survey is now being included in Postupalsky's annual eagle and osprey surveys (Postupalsky, 1965-1972--unpublished) and in the Michigan Audubon Society bird surveys.

Butorides striatus (Linnaeus). GREEN HERON.

Status and Distribution: Common summer resident.

Habitat: Along rivers and streams, and around ponds and potholes. Solitary or semicolonial nesters.

Diet: Fish, frogs, and invertebrates (crayfish and grasshoppers).

Nycticorax nycticorax (Linnaeus). BLACK-CROWNED NIGHT HERON.

Status and Distribution: Formerly an abundant summer resident in scattered colonies, now considered a threatened species in Michigan and of uncertain status in Wisconsin. However, it is world-wide in distribution so there is little danger of extinction.

Diet: Fish, other aquatic vertebrates, and invertebrates.

Comments: Former colonies in Michigan, including one of 600 nests near Bay City (not in the Lake Michigan Basin), have disappeared completely, but a few nesting birds survive here and there (three small colonies along Lake Huron in 1975). There has been some recovery or influx recently in Michigan.

Ixobrychus exilis (Gmelin). LEAST BITTERN.

Status and Distribution: Summer resident, fairly common in southern parts of the Basin, rare and local in the northern counties.

Habitat: Reedy borders of streams and ponds, potholes, and cattail marshes.

Diet: Small fish, tadpoles, frogs, aquatic invertebrates (snails, slugs, leeches, and beetles and other insects).

Botaurus lentiginosus (Rackett). AMERICAN BITTERN.

Status and Distribution: Summer resident, fairly common in suitable habitats but probably declining.

Habitat: Wet grassy meadows and potholes, marshes, and borders of ponds and rivers.

Diet: Forages in meadows for small vertebrates (mice) and large insects, as well as in aquatic habitats for fish, frogs, and invertebrates.

Comments: Has been put on Michigan's rare or scarce list (Mich. Dep. Nat. Resour., 1976).

ORDER ANSERIFORMES

ANATIDAE - SWANS, GEESE, DUCKS

Cygnus olor (Gmelin). MUTE SWAN.

Status and Distribution: Well established as a permanent (essentially non-migratory) resident in several counties in northwestern Michigan. Quite widely scattered in the nesting season, but in winter congregate in the Grand Traverse Bay area where they are hand fed, largely by private citizens.

Aix sponsa (Linnaeus). WOOD DUCK.

Status and Distribution: Summer resident throughout the entire Basin. Status has varied greatly: once fairly common, then quite rare, now fairly common again--perhaps because of management measures (providing nest boxes), closed seasons, and the fact that hunters in open seasons sometimes refrain from shooting *beautiful* wood ducks.

Habits: Nests in cavities in trees.

Diet: Feeds heavily on beechnuts and acorns in woods in fall, but in spring and summer feeds like other ducks by gleaning insects from the surface of the water and tipping up for edible parts of aquatic plants.

Aythya americana (Eyton). REDHEAD.

Status and Distribution: Formerly a fairly common transient but recently becoming more scarce. Some breed locally in widely scattered localities. Some winter in southern parts of the Basin.

Habitat: A diving duck, confined primarily to larger bodies of water.

Diet: Dives in deep water for roots, bulbs, and green shoots of aquatic plants, but also dabbles with surface-feeding ducks for insects and small vertebrates (frogs and small fish).

Comments: Of some importance in hunters' bags, but closed seasons and low bag limits restrict the legal take.

Aythya collaris (Donovan). RING-NECKED DUCK.

Status and Distribution: Common transient, with some breeding areas scattered throughout the Basin (especially in Wisconsin) and some wintering areas in the more southern parts of the Basin.

Diet: Feeds, like the redhead, on a mixed diet of animal and plant material, but mainly on aquatic plants.

Aythya valisineria (Wilson). CANVASBACK.

Status and Distribution: Regular transient, a few breeding and a few over-wintering. Has become quite scarce over the last decade or two, necessitating closed seasons or lowered bag limits.

Diet: Aquatic plants and some insects. Dives deeply, breaking off underwater tubers and plant parts too deep for shallow divers like wigeons and coots, which lie in wait to steal food from emerging canvasbacks.

Comments: Famous among epicureans for its large size and palatability, supposedly from feeding on wild celery (*Vallisneria*).

Aythya affinis (Eyton). LESSER SCAUP.

Status and Distribution: A common transient, probably the most abundant of the diving ducks, occurring in large rafts on the larger lakes. A few breed and many winter around the southern rim of the Basin.

Diet: Feeds largely on animal matter--crustaceans, mollusks, and insects--in the spring and summer but becomes quite herbivorous in the fall.

Bucephala clangula (Linnaeus). COMMON GOLDENEYE.

Status and Distribution: Common transient, common in winter in areas of open water.

Habits: A few breed in holes in trees and stumps.

Diet: In the winter on the Atlantic coast, it feeds largely on animal matter, particularly mollusks obtained by diving; but on freshwater lakes in the interior, it feeds mainly on vegetable matter (Bent, 1925). When visiting streams, it sometimes catches small trout, tadpoles, and insects.

Comments: Fast on the wing, it is a challenging target for sportsmen.

Bucephala albeola (Linnaeus). BUFFLEHEAD.

Status and Distribution: Common transient, often scattered among the more common scaup. Some winter in southern parts of the Basin.

Diet: Feeds mainly on animal matter--a great variety of aquatic invertebrates--but takes some plant food.

Comments: If shot when feeding largely on animal matter, its flesh is said to be rank and unpalatable.

Clangula hyemalis (Linnaeus). OLDSQUAW.

Status and Distribution: A far northern form visiting Lake Michigan in large numbers in the winter, seldom visiting the inland lakes.

Diet: Lives almost exclusively on mollusks and crustaceans.

Comments: Deep divers, they often become entangled in fishermen's nets and are hauled up by the thousands. Because of their diet they are of little or no value for food, so the carcasses are frequently discarded or used as fertilizer (Schorger, 1947).

Oxyura jamaicensis (Gmelin). RUDDY DUCK.

Status and Distribution: Largely a transient, fluctuating in numbers from common to uncommon. A few remain to breed and a few overwinter.

Diet: Largely vegetation.

Comments: Because of its diet, it is an epicurean's delight.

Lophodytes cucullatus (Linnaeus). HOODED MERGANSER.

Status and Distribution: Uncommon to common transient. Summer resident over most of the Basin. A few winter.

Diet: Mostly small fish.

Mergus merganser Linnaeus. COMMON MERGANSER.

Status and Distribution: Common transient and fairly common winter resident on large bodies of water and on open rivers. Some breed along Lake Michigan and on the larger inland lakes.

Diet: Feeds mainly on forage fish but sometimes invades streams in winter and consumes trout (Salyer and Lagler, 1940).

Comments: Of little or no value as a game bird.

Mergus serrator Linnaeus. RED-BREASTED MERGANSER.

Status and Distribution: Common transient on Lake Michigan, less common on the inland lakes. Some breed on islands and along shores of Lake Michigan, and some winter in the southern parts of the Basin.

Diet: Principal food is fish although they will feed on various mollusks, crustaceans, and aquatic insects (Kortright, 1967).

ORDER FALCONIFORMES

CATHARTIDAE - AMERICAN VULTURES

Cathartes aura (Linnaeus). TURKEY VULTURE.

Status and Distribution: Common summer resident (April to October) in the southern two-thirds of the Basin, wandering northward probably to take advantage of road kills and winter-starved deer.

Diet: Feeds entirely on carrion and is presumably of some benefit in disposing of dead animals.

ACCIPITRIDAE - HAWKS, EAGLES, HARRIERS

Accipiter striatus Vieillot. SHARP-SHINNED HAWK.

Status and Distribution: Mainly a transient, a few nesting in northern

counties and wintering in the more southern areas of the Basin. Formerly common, now quite scarce.

Diet: Feeds largely on small birds, incurring the wrath of some bird lovers but probably having a beneficial effect on prey populations.

Accipiter cooperii (Bonaparte). COOPER'S HAWK.

Status and Distribution: Permanent resident but quite migratory. Breeds (formerly) throughout the Basin and winters in the more southern areas. Once fairly common and widely distributed, now quite scarce.

Diet: Feeds on medium-sized birds (flickers, blue jays, young pheasants, *etc.*), and squirrel-sized mammals. Sometimes destructive to game-bird populations, but probably has a culling, beneficial effect.

Comments: Now one of Michigan's rarest raptors. Only two nest sites known (or reported) in 1975--one deserted, the other unsuccessful.

Buteo jamaicensis (Gmelin). RED-TAILED HAWK.

Status and Distribution: The most common hawk in the Basin at all seasons. The reasons are unknown for its stable, if not increasing, numbers when other hawks are declining.

Diet: Feeds mainly on mammals, mice, squirrels, rabbits, and on slow-moving (injured or diseased) birds.

Comments: A valuable predator in rodent control.

Buteo lineatus (Gmelin). RED-SHOULDERED HAWK.

Status and Distribution: Formerly a common summer resident, now severely reduced over much of the northeastern United States, including the Basin. Has been replaced by the red-tailed hawk in many areas, although red-tails generally prefer upland woods (oak-hickory) whereas red-shoulders prefer lowland woods (river bottoms).

Diet: Similar to that of the red-tailed hawk but takes more cold-blooded vertebrates (reptiles and amphibians).

Comments: On Michigan's threatened list (Mich. Dep. Nat. Resour., 1976). Largely gone from southern counties.

Buteo platypterus (Vieillot). BROAD-WINGED HAWK.

Status and Distribution: Summer resident throughout the area, but more common in the north (beech-maple stands). Reported winter records dubious (winters mainly in South America). Abundant at concentration points during migration.

Diet: Similar to that of other soaring hawks but takes more insects.

Haliaeetus leucocephalus (Linnaeus). BALD EAGLE.

Status and Distribution: Uncommon summer resident. Formerly nested throughout the Basin, now restricted to the northern half. A winter visitor in southern parts of Basin. There are 80 or more nest sites in Michigan, some attended by single (unmated) birds.

Diet: Mainly fish, sometimes stolen from ospreys, but more often dead fish gleaned from shores. Also feeds on road kills.

Circus cyaneus (Linnaeus). MARSH HAWK.

Status and Distribution: Fairly common summer resident, at least formerly; now much reduced in some areas, doing well in others. A few winter in the more southern areas. On Wisconsin's list of animals with watch status (Wis. Dep. Nat. Resour. Endangered Species Comm., 1975), and on Michigan's threatened list (Mich. Dep. Nat. Resour., 1976).

Diet: Food quite variable, apparently depending on its hunting grounds. All vertebrate classes represented in its prey.

PANDIONIDAE - OSPREYS

Pandion haliaetus (Linnaeus). OSPREY.

Status and Distribution: Summer resident. A species of world-wide distribution--all continents, and many oceanic islands. Declining severely in many parts of its range. About 80 pairs remain in northern Michigan.

Diet: Fish.

Comments: Listed as an endangered species in Wisconsin, due to pollutants such as DDT (Wis. Dep. Nat. Resour. Endangered Species Comm., 1975); listed as threatened in Michigan (Mich. Dep. Nat. Resour., 1976). Erection of nesting platforms in some areas may help to increase populations.

FALCONIDAE - FALCONS

Falco peregrinus Tunstall. PEREGRINE FALCON.

Status and Distribution: Rare transient. Never common in the Basin, perhaps because of the lack of suitable nesting cliffs. Now extirpated as a breeding bird in the eastern half of the United States.

Diet: Feeds chiefly on birds caught in a swift pursuit or knocked down by an aerial stoop.

Comments: Although now rare in the Basin even as a transient, great interest attends this noble bird. A peregrine trapped by Tom Erdman 18 miles north of Green Bay, Wisconsin, on 11 October 1974, was radio-tagged and followed to Tampico, Mexico (Cochran, 1975--personal communication).

Falco sparverius Linnaeus. AMERICAN KESTREL.

Status and Distribution: Permanent resident, fairly common at all seasons but largely restricted to southern parts of the Basin in winter. Believed to be declining in some areas, fairly stable in others.

Diet: Feeds on a considerable variety of insects (grasshoppers), small birds, and mammals (mice).

ORDER GALLIFORMES

TETRAONIDAE - GROUSE

Canachites canadensis (Linnaeus). SPRUCE GROUSE.

Status and Distribution: Permanent resident, scarce but regular in the Upper Peninsula and northern Wisconsin. Scattered individuals or pairs further south.

Diet: Feeds mainly on conifer buds, twigs, fruit, some ground vegetation, and insects.

Comments: Not considered a good game bird because of its docile nature and taste (often has a *buddy* flavor).

Bonasa umbellus (Linnaeus). RUFFED GROUSE.

Status and Distribution: Permanent resident throughout the Basin. More common northward (Canadian form, *B. u. togata*), but pockets of the southern subspecies (*B. u. umbellus*) occur in several southern counties.

Diet: Feeds on a great variety of plant foods--buds, twigs, leaves, and berries. Can digest cellulose with the aid of its intestinal fauna.

Comments: Sometimes dives into snow for warmth and protection at night, but occasionally the snow crusts over and the grouse is imprisoned. Considered to be the "king" of game birds.

Tympanuchus cupido (Linnaeus). GREATER PRAIRIE CHICKEN.

Status and Distribution: Former permanent (nonmigratory) resident, now nearly gone from Michigan. A few colonies (approximately 2000 individuals) remain in central Wisconsin, mostly outside the Basin (Portage and Wood counties). Only one colony, and scattered individuals, survive in Michigan.

Diet: Primarily seeds and fruits.

Comments: Spring counts of prairie chicken cocks on booming grounds in the Buena Vista Marsh (Portage County, Wisconsin) ranged from 550 in 1950 to 198 in 1971. A severe drought from about 1955 to 1965 and irrigation practices around the marsh periphery have reduced nest and brood cover (Hamerstrom and

Hamerstrom, 1973). Prairie lands and marshlands privately purchased for prairie chicken management will hopefully help to maintain this species in central Wisconsin.

Pedioecetes phasianellus (Linnaeus). SHARP-TAILED GROUSE.

Status and Distribution: Permanent resident (nonmigratory) in the northern part of the Basin. Successfully transplanted on three of the Beaver Islands in Lake Michigan and in other new localities. Still on the decline in Wisconsin due to loss of habitat. Has replaced prairie chickens in areas undergoing succession to oaks, pin cherries, willows, aspens, *etc.*

Diet: Browse (shoots, twigs, and leaves).

PHASIANIDAE - QUAILS, PHEASANTS

Colinus virginianus (Linnaeus). BOBWHITE.

Status and Distribution: Permanent resident in the southern part of the Basin, especially in Wisconsin in earlier days. Subject to die-offs in severe winters.

Diet: Feeds on seeds, grain, and insects, the latter trait popularizing it among farmers and gardeners.

Comments: A favorite game bird in the southern states, but huntable populations scarce in the north.

Phasianus colchicus Linnaeus. RING-NECKED PHEASANT.

Status and Distribution: Common permanent resident (introduced) in the southern half of the Basin, sometimes extending its range (by stocking) into pockets further north.

Diet: Primarily seeds and grain.

Comments: Probably our most valuable upland game bird in the southern part of the Basin, where ruffed grouse are scarce. Does some damage to crops such as tomatoes, melons, corn, and other grains.

MELEAGRIDIDAE - TURKEYS

Meleagris gallopavo Linnaeus. WILD TURKEY.

Status and Distribution: Extirpated before 1900 from its former range in the southern oak-hickory stands. Now successfully reestablished in a number of areas in Michigan (a Wisconsin planting in 1954 was outside the Basin).

Diet: Primarily mast (nuts).

Comments: A wary, hardy, popular game bird, but sometimes hybridizes with domestic turkeys.

ORDER GRUIFORMES

GRUIDAE - CRANES

Grus canadensis (Linnaeus). SANDHILL CRANE.

Status and Distribution: Sizable populations (several hundred birds) scattered throughout Michigan, especially in the Upper Peninsula. Also breeds in central Wisconsin. Has been increasing in both Michigan and Wisconsin in recent years.

Diet: Lives on a mixed diet of grain, marsh vegetation, crayfish, frogs, and small vertebrates.

Comments: Migrating birds have become a problem in grain fields in the western part of the Upper Peninsula.

RALLIDAE - RAILS, GALLINULES, COOTS

Rallus limicola Vieillot. VIRGINIA RAIL.

Status and Distribution: Summer resident throughout the Basin but restricted to wet, densely vegetated marshes, which are becoming more scarce.

Diet: 38% seeds, 62% insects (Horak, 1970).

Comments: There are open seasons on all rails. They are small but delicious morsels.

Porzana carolina (Linnaeus). SORA.

Status and Distribution: Distribution and habits similar to Virginia rail.

Diet: 73% seeds, 27% insects. [The seed diet reflects adaptation for living noncompetitively with Virginia rails in the same marsh (Horak, 1970).]

Gallinula chloropus (Linnaeus). COMMON GALLINULE.

Status and Distribution: Uncommon summer resident in the southern part of the Basin; quite widespread in Michigan, restricted mainly to southeastern part in Wisconsin.

Diet: Seeds, marsh vegetation, and some animal matter.

Comments: Occasionally hunted as a game bird.

Fulica americana Gmelin. AMERICAN COOT.

Status and Distribution: Common summer resident throughout the Basin in ponds and lakes with marshy borders. Winters commonly around the southern rim of the Basin.

Diet: Plant and animal matter, but mainly vegetation.

Comments: Despised by hunters because of its supposed (but probably negligible) competition with ducks. Although its flesh is edible, it is often shot and discarded.

ORDER CHARADRIIFORMES

CHARADRIIDAE - PLOVERS

Charadrius semipalmatus Bonaparte. SEMIPALMATED PLOVER.

Status and Distribution: Common transient, especially along the beaches of Lake Michigan.

Diet: Scavenges on waste matter, mostly animal, washed ashore.

Charadrius melodus Ord. PIPING PLOVER.

Status and Distribution: Uncommon transient. Rare local summer resident on sandy beaches along Lake Michigan shores.

Diet: Primarily insects.

Comments: A threatened species in Michigan; apparently none breeding now on Lake Michigan shores in Wisconsin.

Charadrius vociferus Linnaeus. KILLDEER.

Status and Distribution: Common summer resident throughout the Basin. A few remain over winter.

Habitat: Usually in open habitats--around lakes, ponds, and streams--but also in fields, gardens, pastures, and mudholes.

Diet: Primarily animal matter.

Pluvialis dominica (Müller). AMERICAN GOLDEN PLOVER.

Status and Distribution: Uncommon transient, a little more common in fall (immatures), but adults migrate down the east coast (from Nova Scotia to northern South America in a spectacular, nonstop, 2400-mile flight).

Diet: Eats mostly insects in spring and summer, but fattens on berries prior to its long fall flight.

Pluvialis squatarola (Linnaeus). BLACK-BELLIED PLOVER.

Status and Distribution: Uncommon but regular transient. Usually found along Lake Michigan, but sometimes inland, especially in fall.

Diet: Feeds on a variety of insects, such as grasshoppers, grubs, beetles, and cutworms. May also eat some seeds and berries.

SCOLOPACIDAE - SANDPIPERS, ALLIES

Arenaria interpres (Linnaeus). RUDDY TURNSTONE.

Status and Distribution: Uncommon transient, but sometimes sizable flocks seen, mainly along Lake Michigan shores.

Diet: Turns over stones for animal prey.

Philohela minor (Gmelin). AMERICAN WOODCOCK.

Status and Distribution: Fairly common migrant and summer resident, less common in the north.

Diet: Feeds largely on earthworms obtained by probing in soft soil, but also goes into meadows for grasshoppers, beetles, and other insects.

Comments: A valuable, sporty, delectable game bird. Michigan specimens contain sublethal quantities of dieldrin presumably ingested in foods on wintering grounds in Louisiana (McLane *et al.*, 1973). Has a spectacular evening nuptial flight.

Capella gallinago (Linnaeus). COMMON SNIPE.

Status and Distribution: Common transient, occasional in winter.

Diet: A marsh dweller probing in shallow water for aquatic insects, sometimes foraging on mud flats.

Comments: Has not withstood hunting pressure as well as the woodcock.

Actitis macularia (Linnaeus). SPOTTED SANDPIPER.

Status and Distribution: Common summer resident throughout the Basin along Lake Michigan, inland lakes, and rivers and streams where there are sandy, muddy, or gravelly shores. The only common breeding scolopacid throughout the Basin.

Diet: Insects.

Tringa solitaria Wilson. SOLITARY SANDPIPER.

Status and Distribution: Common transient, more common in late summer and fall.

Habitat: Coastal and inland waters. Nests in trees, in abandoned nests of other birds.

Diet: Aquatic insects.

Tringa melanoleuca (Gmelin). GREATER YELLOWLEGS.

Tringa flavipes (Gmelin). LESSER YELLOWLEGS.

Status and Distribution: Common transients in both coastal and inland waters, of nearly equal status and similar habits. Greater yellowlegs appear a little earlier in spring and later in fall.

Diet: Both species probe in shallow water, or glean the surface for small minnows and aquatic insects. Competition is avoided since the longer-legged, longer-billed species probes in slightly deeper water.

Calidris melanotos (Vieillot). PECTORAL SANDPIPER.

Status and Distribution: Common transient; often the first sandpiper to appear in spring (mid-April or earlier) and among the last to leave in the fall.

Habitat: Shores, marshes, and puddles in fields.

Diet: Flies, beetles, hymenopterans, and algae.

Calidris alpina (Linnaeus). DUNLIN OR RED-BACKED SANDPIPER.

Status and Distribution: Common transient, often appearing in enormous flocks.

Habitat: Found along shores of lakes and ponds and in flooded fields.

Diet: Aquatic invertebrates--mollusks, crustaceans, worms, and insects.

Calidris fuscicollis (Vieillot). WHITE-RUMPED SANDPIPER.

Calidris bairdii (Coues). BAIRD'S SANDPIPER.

Calidris minutilla (Vieillot). LEAST SANDPIPER.

Calidris pusillus (Linnaeus). SEMIPALMATED SANDPIPER.

Calidris mauri Cabanis. WESTERN SANDPIPER.

Status and Distribution: These five small "peeps" are all regular transients in the Basin, both along Lake Michigan shores and on inland waters. Often

they appear in mixed flocks and are a challenge in identification, differing only slightly in size, plumage, bill length, and leg color. *Calidris minutilla* and *C. pusillus* are the most common.

Diet: All feed on aquatic invertebrates and small amounts of plant matter, avoiding some competition by minor specializations in food selection, manner of foraging, and foraging range.

Calidris alba (Pallas). SANDERLING.

Status and Distribution: Common transient along Lake Michigan beaches, more rarely inland. More common in the fall.

Diet: Feeds by probing in wet sand along beaches for the abundant aquatic invertebrates washed ashore with successive waves.

Limnodromus griseus (Gmelin). SHORT-BILLED DOWITCHER.

Limnodromus scolopaceus (Say). LONG-BILLED DOWITCHER.

Status and Distribution: Uncommon transients.

Diet: Both dowitchers have similar feeding habits, probing in shallow water with their long bills for aquatic invertebrates. Some vegetable debris perhaps picked up incidentally in probing for insects.

Comments: The two species are almost indistinguishable in the field.

LARIDAE - GULLS, TERNS

Larus argentatus Pontoppidan. HERRING GULL.

Status and Distribution: Common, locally abundant summer resident, breeding in large colonies on islands in Lake Michigan. Common inland during migration. Immatures, which don't breed until their third or fourth summer, may appear almost anywhere. Many adults remain over winter.

Diet: Scavenges on fish and other animals along beaches; also feeds on grasshoppers and other insects in fields. Common visitors to garbage dumps.

Larus delawarensis Ord. RING-BILLED GULL.

Status and Distribution: Status, distribution, and habits similar to those of the Herring gull.

Larus philadelphia (Ord). BONAPARTE'S GULL.

Status and Distribution: Common transient along Lake Michigan, less common inland. Nonbreeding individuals often present in summer. Fairly common in winter around the southern rim of the Basin.

Diet: Unlike the herring and ring-billed gulls, it is mainly insectivorous, catching flying insects on the wing or gleaning them from the surface of the water. Some fish, and rarely plant matter, supplement the diet.

Sterna hirundo Linnaeus. COMMON TERN.

Status and Distribution: Common summer resident on islands in Lake Michigan; frequently found inland during migration. Believed to be declining, especially in Wisconsin.

Diet: Unlike gulls, the terns feed mainly on living fish which they glean from the water surface or catch by dipping into the water without submerging.

Comments: Candidate for critical lists in both Michigan and Wisconsin.

Chlidonias niger (Linnaeus). BLACK TERN.

Status and Distribution: Common summer resident in the southern parts of the Basin, with frequent colonies in locations further north.

Habitat: A "marsh" bird in both coastal and inland marshes.

Diet: Feeds mainly on insects (often caught on the wing) and on small fish and fish fry caught by dipping.

ORDER COLUMBIFORMES

COLUMBIDAE - PIGEONS, DOVES

Zenaida macroura (Linnaeus). MOURNING DOVE.

Status and Distribution: Common, locally abundant summer resident, March to October; less common in the north. Many winter over in the southern half of the Basin.

Habits: Prolific breeders. Only two young per brood but may nest from March to September; one pair near Battle Creek, Michigan, raised four or five successive broods in one year (Walkinshaw, 1962).

Diet: Entirely granivorous, feeding their young on pigeon's milk produced by desquamation of the lining of the crop.

Comments: Hunted in open seasons in many central and southern states where more than 20 million are harvested annually.

ORDER CUCULIFORMES

CUCULIDAE - CUCKOOS

Coccyzus americanus (Linnaeus). YELLOW-BILLED CUCKOO.

Coccyzus erythropthalmus (Wilson). BLACK-BILLED CUCKOO.

Status and Distribution: Regular summer residents--the yellow-billed less common and spotty in the northern sections, the black-billed rather uniformly distributed.

Diet: Both species almost entirely insectivorous, consuming many hairy caterpillars which most other birds do not eat.

ORDER STRIGIFORMES

TYTONIDAE - BARN OWLS

Tyto alba (Scopoli). BARN OWL.

Status and Distribution: Infrequent or rare permanent residents in the southern sections of the Basin. Severe winter kills recorded in Wisconsin and Michigan (Wallace, 1948); hence they fluctuate from locally common to rare or completely absent in some years.

Habits: Nest in holes in trees and in old buildings.

Diet: Feed almost entirely on small mammals [92% mice, 7% shrews, 1% birds--mainly sparrows and starlings (Wallace, 1948)].

STRIGIDAE - TYPICAL OWLS

Otus asio (Linnaeus). SCREECH OWL.

Status and Distribution: Uncommon to rare permanent resident in the central and northern parts of the Basin, more common in southern sections.

Habitat: Parks, villages, cemeteries. Nests in tree cavities or bird boxes.

Diet: Primarily mice and large insects, sometimes small birds.

Comments: Apparently suffered severe setbacks with initiation of heavy DDT spraying programs in the 1950's and 1960's.

Bubo virginianus (Gmelin). GREAT HORNED OWL.

Status and Distribution: Fairly common permanent resident in woodlots throughout the Basin, the most common owl in spite of persecution by uninformed or prejudiced sportsmen and farmers.

Diet: Feeds on fish, frogs, dragonfly larvae, *etc.*, caught by diving.

ORDER PICIFORMES

PICIDAE - WOODPECKERS

Colaptes auratus (Linnaeus). COMMON FLICKER.

Status and Distribution: Common summer resident (March to November) throughout the Basin, overwintering in the southern sections.

Diet: Unlike other woodpeckers, it feeds mainly on ants at ground level.

Comments: Three formerly recognized North American species have been combined in this species.

Dryocopus pileatus (Linnaeus). PILEATED WOODPECKER.

Status and Distribution: Uncommon permanent resident in the northern, more heavily wooded, parts of the Basin.

Habits: The largest woodpecker in the Basin, it hammers noisily on trees and gouges out deep holes in decaying trees searching for carpenter ants and wood borers. Sometimes drills into cabins and lodges.

Diet: Insects, fruit.

Melanerpes carolinus (Linnaeus). RED-BELLIED WOODPECKER.

Status and Distribution: Fairly common permanent resident in southern parts of the Basin.

Diet: Mast, fruit, beechnuts, acorns, and some insects.

Melanerpes erythrocephalus (Linnaeus). RED-HEADED WOODPECKER.

Status and Distribution: Fairly common permanent resident in southern parts of the Basin, spotty and irregular further north.

Diet: Feeds mainly on fruit, nuts, and insects; sometimes on the eggs and young of other birds.

Sphyrapicus varius (Linnaeus). YELLOW-BELLIED SAPSUCKER.

Status and Distribution: Common transient in the southern part of the Basin, uncommon local summer resident in the northern parts. A few overwinter in southern parts.

Diet: Largely herbivorous, feeding on cambium and sap that fills the well holes the sapsuckers drill in trees.

Comments: Do considerable damage in northern forests by spoiling trees for first-class lumber. Mar and devitalize fruit trees and ornamentals and sometimes annoy homeowners by gouging holes in shingles and siding.

Picoides villosus (Linnaeus). HAIRY WOODPECKER.

Picoides pubescens (Linnaeus). DOWNY WOODPECKER.

Status and Distribution: Common permanent residents throughout the Basin, the hairy largely restricted to deep woods except in winter, the downy more common in open areas--roadsides, orchards, shade trees in villages.

Diet: Both species feed mainly on wood-boring insects in trees and branches, but occupy different niches and feed on slightly different prey. The sexes have slightly differing foraging habits, thus avoiding competition with each other and permitting a more effective utilization of their territory (Kilham, 1970).

ORDER PASSERIFORMES

Nearly half of the species of birds in the Basin belong to the great order of passerine or perching birds, often known (not quite accurately) as songbirds. Twenty families of passerine birds are represented in the Basin; listed below are the species in each family that are of regular occurrence.

TYRANNIDAE - NEW WORLD FLYCATCHERS

Tyrannus tyrannus (Linnaeus). EASTERN KINGBIRD.

Status and Distribution: Common summer resident, early May to early September.

Habitat: Relatively open spaces with trees--roadsides, borders, orchards, and waterways--showing some preference for placing nests over water.

Diet: Insectivorous, sometimes raiding bee hives, although the catch is mainly drones.

Myiarchus crinitus (Linnaeus). GREAT CRESTED FLYCATCHER.

Status and Distribution: Common summer resident, early May to mid-September.

Habitat: Woodlands and borders.

Diet: Insectivorous--mainly moths, caterpillars, and beetles (Martin *et al.*, 1951).

Diet: Feeds on rabbits (40%), mice and other rodents (20%), game birds (20%), and miscellaneous other vertebrates (Errington *et al.*, 1940). Often captures skunks (owls have no sense of smell) and stray house cats.

Comments: Now protected by both state and federal laws, with the provision that individuals molesting poultry or domestic animals can be eradicated.

Nyctea scandiaca (Linnaeus). SNOWY OWL.

Status and Distribution: Irregular winter invader, chiefly in 3- or 4-year cycles when its northern food supply (lemmings) fails.

Diet: While in the Basin, it feeds on any animal prey--dead or alive--it can get.

Strix varia Barton. BARRED OWL.

Status and Distribution: Permanent resident. Formerly perhaps our most common owl, now quite scarce.

Diet: Prey is mainly mammals but some birds.

Comments: On Michigan's rare or scarce list (Mich. Dep. Nat. Resour., 1976); some committee members wanted it on threatened list.

Asio otus (Linnaeus). LONG-EARED OWL.

Status and Distribution: Uncommon, irregular transient and resident, often wintering.

Habits: Nests sporadically, often in tamarack swamps.

Diet: Largely small mammals; sometimes birds, other vertebrates, and large insects.

Asio flammeus (Pontoppidan). SHORT-EARED OWL.

Status and Distribution: Irregular, may appear at any time of year; occasionally found nesting, but more commonly recorded in fall and winter.

Habitat: Unlike most owls, it is partially diurnal and inhabits open areas, meadows, and brushy fields.

Diet: Small mammals, occasionally birds.

ORDER CAPRIMULGIFORMES

CAPRIMULGIDAE - GOATSUCKERS

Caprimulgus vociferus Wilson. WHIP-POOR-WILL.

Status and Distribution: Summer resident, late April to September. Distribution spotty--common in some localities, rare or absent in others.

Diet: Feeds on nocturnal insects (particularly noctuids) caught on the wing.

Chordeiles minor (Forster). COMMON NIGHTHAWK.

Status and Distribution: Common summer resident. One of the latest migrants to arrive (mid-May) and among the earliest to leave (August-September) for its usual winter quarters across the equator.

Habits: Nests on flat-topped roofs of buildings in many cities, and in gravel pits, sand trails, and other openings in rural areas.

Diet: Food consists almost entirely of insects, including many mosquitos, moths, and flying ants caught on the wing.

ORDER APODIFORMES

APODIDAE - SWIFTS

Chaetura pelagica (Linnaeus). CHIMNEY SWIFT.

Status and Distribution: Common summer resident, late April to September.

Diet: Feeds almost entirely on insects captured in flight.

TROCHILIDAE - HUMMINGBIRDS

Archilochus colubris (Linnaeus). RUBY-THROATED HUMMINGBIRD.

Status and Distribution: Summer resident, May to September; fairly common in the southern half of the Basin, less common further north.

Diet: Feeds on insects and nectar obtained by probing in flowers.

ORDER CORACIIFORMES

ALCEDINIDAE - KINGFISHERS

Megaceryle alcyon (Linnaeus). BELTED KINGFISHER.

Status and Distribution: Summer resident, March to November, a few remaining over winter. Formerly quite common, now apparently becoming scarce.

Sayornis phoebe (Latham). EASTERN PHOEBE.

Status and Distribution: Summer resident, late March to late October. Quite scarce and spotty since the die-off during the severe winter of 1957-1958 in the southern states.

Habitat: Occurs along streams, nesting under bridges and in culverts; also on farms (formerly orchards), nesting on buildings.

Diet: Insectivorous, sometimes taking minnows stranded in pools, and capturing snow flies in early spring when other flies are less available.

Empidonax flaviventris (Baird and Baird). YELLOW-BELLIED FLYCATCHER.

Empidonax virescens (Vieillot). ACADIAN FLYCATCHER.

Empidonax traillii (Audubon). WILLOW FLYCATCHER.

Empidonax alnorum Brewster. ALDER FLYCATCHER.

Empidonax minimus (Baird and Baird). LEAST FLYCATCHER.

Status and Distribution: Summer residents--*E. flaviventris* in northern bogs and swamps, *E. virescens* in southern deciduous woods, *E. traillii* and *E. alnorum* (practically indistinguishable in the field except for songs) in willow and alder swamps, and *E. minimus* in deciduous woods.

Diet: All species are insectivorous.

Contopus virens (Linnaeus). EASTERN WOOD PEWEE.

Status and Distribution: Common summer resident in woods throughout the Basin.

Diet: Insectivorous.

ALAUDIDAE - LARKS

Eremophila alpestris (Linnaeus). HORNED LARK.

Status and Distribution: The more southern race, *E. a. pratincola*, is a common summer resident through the Basin from late February to November; it overlaps with the wintering race *E. a. alpestris* from the north.

Habitat: Open fields and pastures; often seen picking up gravel along roadsides during spring thaws.

Diet: Primarily seed-eaters in fall and winter, insect-eaters in spring and summer.

HIRUNDINIDAE - SWALLOWS

Iridoprocne bicolor (Vieillot). TREE SWALLOW.

Status and Distribution: Common summer resident, late March to October; earliest swallow in spring, latest in the fall.

Habits: Nests in bird boxes and in tree cavities.

Diet: Subsists mainly on insects caught on the wing (as do all swallows), but feeds on fruit in emergencies during prolonged freezes in its southern wintering grounds.

Riparia riparia (Linnaeus). BANK SWALLOW.

Status and Distribution: Common summer resident, early May to September; less common northward.

Habits: Nests in large colonies in banks, usually in the vicinity of water.

Diet: Insectivorous.

Stelgidopteryx ruficollis (Vieillot). ROUGH-WINGED SWALLOW.

Status and Distribution: Fairly common resident in southern parts, thinning out northward.

Habits: Mostly solitary nesters in culverts, stonewalls, under bridges, or in bank swallow colonies.

Diet: Insectivorous.

Hirundo rustica Linnaeus. BARN SWALLOW.

Status and Distribution: Common summer resident throughout the Basin, mid-April to September or October.

Habitat: Farms, roadsides, and especially bodies of water where insect fare is usually abundant.

Diet: Insectivorous, sometimes develops an addiction for fresh peas in the pod.

Petrochelidon pyrrhonota (Vieillot). CLIFF SWALLOW.

Status and Distribution: Uncommon and local summer resident, the least common of our swallows.

Habitat: Some sizable colonies nest in the Wisconsin Dells (personal observation) and on some farm buildings in Wisconsin and Michigan.

Diet: Insectivorous.

Progne subis (Linnaeus). PURPLE MARTIN.

Status and Distribution: Common summer resident in most areas in the southern half of the Basin, but spotty (and unpredictable) in the localization of colonies.

Diet: Insectivorous; its alleged capacity for controlling mosquitos doubtful (Kale, 1968).

CORVIDAE - CROWS, JAYS

Cyanocitta cristata (Linnaeus). BLUE JAY.

Status and Distribution: Common to abundant at all seasons. Some individuals largely sedentary, others highly migratory. Sometimes heavy flights during migration.

Diet: Omnivorous, often robbing other birds of their eggs and young.

Corvus corax Linnaeus. COMMON RAVEN.

Status and Distribution: Apparently widespread when Father Marquette visited Michigan in 1669-1670, now largely restricted to northern Wisconsin and the Upper Peninsula of Michigan.

Diet: Omnivorous, sometimes a serious predator on waterfowl nests.

Corvus brachyrhynchos Brehm. COMMON CROW.

Status and Distribution: Common to abundant permanent resident, but some populations highly migratory.

Diet: Omnivorous. Considered a mixed blessing: steals grain, eats small birds, plunders waterfowl nests; but a useful predator on mice, grubs, beetles, *etc.*

Comments: Has withstood continuous persecution successfully, but now thought to be declining. Protected by federal law, but some states (including Michigan) have open seasons.

PARIDAE - CHICKADEES, TITMICE

Parus atricapillus Linnaeus. BLACK-CAPPED CHICKADEE.

Status and Distribution: Common to abundant permanent resident, essentially nonmigratory.

Diet: Mainly insectivorous (decidedly beneficial) in spring and summer, supplementing its diet with fruits and seeds in fall and winter.

Comments: Considered one of the most beloved and amusing winter birds by those who feed birds.

Parus bicolor Linnaeus. TUFTED TITMOUSE.

Status and Distribution: Permanent resident in the southern half of the Basin, thinning out northward.

Diet: Mainly insects in summer; fruit, seeds, and nuts in winter.

SITTIDAE - NUTHATCHES

Sitta carolinensis Latham. WHITE-BREASTED NUTHATCH.

Status and Distribution: Common permanent resident throughout most of the Basin, but much less common in the northern extremes.

Diet: Omnivorous. Mainly insectivorous in spring and summer; seeds, nuts, and fruit in fall and winter.

Comments: Hatch is an old English word for crack, hence "Nuthatch."

Sitta canadensis Linnaeus. RED-BREASTED NUTHATCH.

Status and Distribution: Permanent resident in the coniferous northern areas, periodically invading the southern areas when the cone supply fails.

Diet: Seeds of coniferous trees and insects.

CERTHIIDAE - CREEPERS

Certhia familiaris Linnaeus. BROWN CREEPER.

Status and Distribution: Uncommon (or infrequently observed) permanent resident in the northern counties. More commonly observed during migration and in winter.

Diet: Forages over trunks and branches of trees for an almost exclusively insect fare.

of the woodland thrushes to arrive (early April), last to leave (October-November), and the only one wintering within the United States.

Diet: Insects, fruit.

Comments: Thought by some to be the world's best avian singer, even surpassing the nightingale.

Catharus ustulatus (Nuttall). SWAINSON'S (OLIVE-BACKED) THRUSH.

Status and Distribution: Common transient en route to the Arctic, but some remain to nest in the more northern counties.

Diet: Insects, fruit.

Catharus fuscescens (Stephens). VEERY.

Status and Distribution: Fairly common summer resident throughout the Basin.

Habitat: Wooded swamps, fern-covered ravines, and low woods.

Diet: Insects and berries (Martin *et al.*, 1951).

Sialia sialis (Linnaeus). EASTERN BLUEBIRD.

Status and Distribution: Formerly a common, well-known and beloved farm, orchard, and roadside bird. Now severely reduced.

Diet: Feeds mainly on insects (68%) taken on the ground, and on wild fruit (wild cherries, raspberries, and blackberries).

Comments: Severe winters, storms during migration, loss of orchards and wooden fence posts for nesting, competition with more agressive hole-nesters (*e.g.* starlings, house sparrows), ectoparasites on nestlings, and heavy spraying in commercial orchards have been its undoing (Wallace, 1959).

SYLVIIDAE - GNATCATCHERS, KINGLETS

Polioptila caerulea (Linnaeus). BLUE-GRAY GNATCATCHER.

Status and Distribution: Uncommon summer resident in southern portions of the Basin.

Diet: Feeds almost exclusively on insects or other invertebrates, with little or no vegetable matter.

Regulus satrapa Lichtenstein. GOLDEN-CROWNED KINGLET.

Status and Distribution: Common transient. Summer resident in coniferous

stands and bogs in the northern counties, irregular in winter throughout most of the Basin.

Diet: Food habits not well known, but appear to be almost exclusively insectivorous, including insect eggs and larvae obtained from crevices in bark and twigs.

Regulus calendula (Linnaeus). RUBY-CROWNED KINGLET.

Status and Distribution: Common to abundant transient, a few rarely lingering to breed in northern counties and remaining over winter in southern sections.

Diet: Some fruit (about 6%) and a great variety of insects obtained by gleaning.

MOTACILLIDAE - PIPITS

Anthus spinoletta (Linnaeus). WATER PIPIT.

Status and Distribution: Regular transient, especially along the lakeshore; sometimes found in inland fields with larks and longspurs.

Diet: Insects, mollusks, crustaceans, small seeds, and berries.

BOMBYCILLIDAE - WAXWINGS

Bombycilla cedrorum Vieillot. CEDAR WAXWING.

Status and Distribution: Permanent resident, but wandering widely, sometimes assembling in large flocks in winter.

Diet: Almost entirely frugivorous, but often seen flycatching in summer. Adults feed insects to their young for three days before changing to fruit (Putnam, 1949).

LANIIDAE - SHRIKES

Lanius ludovicianus Linnaeus. LOGGERHEAD SHRIKE.

Status and Distribution: Uncommon summer resident, arriving early (March or April) and overlapping and becoming confused with departing northern shrikes (*Lanius excubitor*). Some remain over winter, creating more confusing identification problems.

Diet: Mice and small birds; consumes more insects (grasshoppers) than the northern shrike.

Comments: Has declined severely in both Michigan and Wisconsin in recent years (on critical lists in both states).

TROGLODYTIDAE - WRENS

Troglodytes aedon Vieillot. HOUSE WREN.

Status and Distribution: Common summer resident (late April to October) throughout most of the Basin, thinning out northward.

Habitat: Yards, gardens, woodlots, formerly orchards.

Diet: Largely insectivorous, but shows some proclivity for spiders.

Troglodytes troglodytes (Linnaeus). WINTER WREN.

Status and Distribution: Summer resident in the northern counties, transient and sometimes winter resident in the southern sections.

Habitat: Woodlands, ravines, bogs, especially areas along brooks.

Diet: Almost entirely insectivorous--forest insects and some spiders.

Cistothorus palustris (Wilson). LONG-BILLED MARSH WREN.

Status and Distribution: Summer resident throughout the Basin, but rare or local in the northern parts.

Habitat: Cattail marshes, lake and river borders with rank aquatic vegetation. Colonial nesters.

Diet: Gleans insects from marsh vegetation, and does some flycatching.

Cistothorus platensis (Latham). SHORT-BILLED MARSH WREN.

Status and Distribution: Summer resident throughout the Basin.

Habitat: Grassy marshes and fields, somewhat scattered.

Diet: Insectivorous.

MIMIDAE - MOCKINGBIRDS, CATBIRDS, THRASHERS

Mimus polyglottos (Linnaeus). MOCKINGBIRD.

Status and Distribution: Irregular permanent resident; may show up most anywhere at any season, but perhaps more conspicuous in winter when it patronizes feeding stands. Actual nesting records rather scarce.

Diet: Mixed diet of about half animal matter and half fruit, the latter not endearing it to fruit growers.

Comments: Too scarce in the Basin to be of much economic significance.

Dumetella carolinensis (Linnaeus). GRAY CATBIRD.

Status and Distribution: Common summer resident (late April to October), rare in winter. Less common in the north.

Diet: Mixed animal and vegetable diet; sometimes destructive to grapes, cherries, strawberries, and blueberries on fruit farms.

Toxostoma rufum (Linnaeus). BROWN THRASHER.

Status and Distribution: Summer resident, common in the southern sections, less frequent in the northern parts. Occasional winter records.

Diet: Consumes more animal matter (about 60%) than the two mimids listed above, but takes fruit and other vegetable matter (about 40%), mainly in fall and winter.

TURDIDAE - THRUSHES, BLUEBIRDS

Turdus migratorius Linnaeus. AMERICAN ROBIN.

Status and Distribution: Abundant migrant (ranges into Alaska) and common summer resident throughout the Basin. Not uncommon in winter. Millions perished from DDT in the war against Dutch elm disease, but it survives in large numbers in untreated areas.

Diet: Feeds heavily on earthworms in spring (its source of DDT) and on insects and fruit at other times.

Comments: Its depredations in cherry orchards, blueberry fields, and strawberry patches give Michigan's state bird a bad name among growers.

Hylocichla mustelina (Gmelin). WOOD THRUSH.

Status and Distribution: Summer resident in the southern half of the Basin, spotty further north.

Diet: All of the *Hylocichla* and *Catharus* thrushes in the Basin (five species) feed mainly on insects and other animal matter in the spring and early summer (sometimes nearly 100%) but supplement this diet with fruit in late summer and fall.

Comments: Fruit taken by the woodland thrushes is almost entirely from the wild; hence, they seldom come into conflict with man's interests.

Catharus guttatus (Pallas). HERMIT THRUSH.

Status and Distribution: Common summer resident in the northern half of the Basin, common transient and rare winter resident in the southern part. Earliest

STURNIDAE - STARLINGS

Sturnus vulgaris Linnaeus. STARLING.

Status and Distribution: Abundant, widespread, introduced pest. Occurs in all seasons, although quite migratory. Late summer roosts often reach enormous proportions.

Diet: Omnivorous, although predominantly insectivorous.

Comments: Its insectivorous diet reflects some credit to its otherwise deplorable habits: injures fruit and grain, competes with native birds for food, ejects flickers and other hole-nesters from their nests, congregates in large annoying roosts in cities and parks, spreads histoplasmosis (Jackson, 1973), defaces buildings and public structures with droppings, and creates undesirable buildup of ammonium compounds in the soil under their roosts.

VIREONIDAE - VIREOS

Vireo flavifrons Vieillot. YELLOW-THROATED VIREO.

Status and Distribution: Summer resident in the southern half of the Basin, straying to more northern outposts irregularly.

Diet: All vireos in the Basin are largely insectivorous, gleaning insects and caterpillars from leaves and twigs of trees.

Vireo olivaceus (Linnaeus). RED-EYED VIREO.

Status and Distribution: Common summer resident, especially in the more northern second-growth stands of aspen, birch, and maple. Said to be one of the most abundant birds in eastern North America, but has declined recently in many areas.

Diet: Insectivorous.

Comments: All vireos, especially red-eyed vireos, are among the most common hosts for parasitic cowbirds.

Vireo gilvus (Vieillot). WARBLING VIREO.

Status and Distribution: Common summer resident over most of the Basin, but somewhat spotty in the northern parts.

Diet: Like other vireos, it feeds almost exclusively on insects and sings incessantly.

PARULIDAE - WOOD WARBLERS

About 40 species of warblers have been recorded in the Basin (see Table 4). The majority are transient over most of the Basin, but about 20 species nest

in the northern parts of Michigan and Wisconsin, some of them at the southern limits of their breeding range. Nine are southern species reaching the northern limits of their breeding range in the southern part of the Basin. Some are exceedingly abundant in migration, others challengingly rare or hard to find.

The spring migration is heralded by the early arrival of the yellow-rumped (myrtle) warbler (*Dendroica coronata*) in mid-April or earlier, reaches a peak in mid-May, and terminates in late May or early June. Altogether, the warbler migration in the spring is a colorful and spectacular event; often 10-20 species can be seen in a brief span of observation, or even in a single tree. Fall migrants are more drab, with most of the colorful males of spring having lost their bright colors.

All parulids are primarily insectivorous, but take some fruit in late summer and fall. Tennessee warblers (*Vermivora peregrina*) are accused of puncturing grapes, perhaps to quench their thirst on warm days. Warblers vary considerably in their manner of obtaining food. Ovenbirds (*Seiurus aurocapillus*), for instance, are mainly ground feeders, turning over leaves and scratching in debris for hidden insects and worms. Black-and-white warblers (*Mniotilta varia*) feed on insects in bark crevices, after the manner of woodpeckers and creepers. About a dozen species inhabit shrubs rather than tall trees, and the leaf gleaners in trees (the majority of species) select different foraging levels to minimize competition. Some prefer coniferous, others deciduous trees. Several species of special interest have been discussed in other parts of this report (see Table 4 for a complete list).

PLOCEIDAE - WEAVER FINCHES

Passer domesticus (Linnaeus). HOUSE SPARROW.

Status and Distribution: Abundant permanent resident, essentially nonmigratory. Introduced from Europe, where it is also abundant and a pest.

Habitat: Lives primarily around human dwellings, in cities, on farms (particularly those with livestock), and in gardens and grain fields.

Diet: Omnivorous, consuming many insects in spring and summer, but resorting mainly to seeds, grain, fruit, and garbage at other times.

Comments: Considered a pest, but no practical methods of control have been devised.

ICTERIDAE - MEADOWLARKS, BLACKBIRDS, ORIOLES

Dolichonyx oryzivorus (Linnaeus). BOBOLINK.

Status and Distribution: Summer resident over most of the Basin in fields. Common, at least formerly, on some farms, but believed to be declining.

Diet: Largely insectivorous during its brief stay in the Basin (May to August or September), but destructive in southern rice fields and grain fields during fall migration.

Sturnella magna (Linnaeus). EASTERN MEADOWLARK.

Status and Distribution: Common summer resident throughout most of the Basin, less common in the northern parts. A few remain over winter.

Diet: Probes under roots of grasses with its long bill for both plant and animal matter--mainly animal matter in spring, seeds and grain in fall. Also eats many grasshoppers, crickets, and cutworms.

Sturnella neglecta Audubon. WESTERN MEADOWLARK.

Status and Distribution: Well established in the Michigan Upper Peninsula and in parts of southwestern Michigan and Wisconsin. Scattered distribution elsewhere.

Habitat: Inhabits drier sites than the eastern meadowlark.

Diet: Insects, seeds.

Agelaius phoeniceus (Linnaeus). RED-WINGED BLACKBIRD.

Status and Distribution: Abundant transient and common summer resident, with an increasing tendency to overwinter in the southern part of the Basin.

Habits: Formerly confined largely to marshes for nesting, red-wings have exploded into farm areas, often nesting along fencerows and in alfalfa fields. Field nests are less successful than marsh nests.

Diet: Omnivorous.

Comments: Often an uncontrollable pest, but mostly south of the Basin.

Icterus galbula (Linnaeus). NORTHERN (BALTIMORE) ORIOLE.

Status and Distribution: Common summer resident in the southern two-thirds of the Basin, uncommon and local in the northern one-third.

Diet: Mainly insectivorous, especially caterpillars in shade trees. Eats some fruit in season, especially wild or cultivated grapes which it punctures for juice and pulp.

Quiscalus quiscula (Linnaeus). COMMON GRACKLE.

Status and Distribution: Common to abundant summer resident, less common in winter. Has enjoyed a population boom, largely replacing robins in suburbs and on campuses where heavy spraying programs have decimated robins.

Diet: Omnivorous habits allow selection to a certain extent: in populated areas, it resorts to waste products of man--such as bread crusts, popcorn, apple cores, *etc.*; also eats the eggs and young of other birds, grain, small vertebrates, and insects.

Molothrus ater (Boddaert). BROWN-HEADED COWBIRD.

Status and Distribution: Common to abundant summer resident with an increasing tendency to remain over winter in southern parts of the Basin.

Habits: Lays eggs in the nests of other birds, often rendering ineffective the reproductive success of the host species.

Diet: Its food runs heavily to plant matter (nearly 80%), including some grain and many wild seeds.

THRAUPIDAE - TANAGERS

Piranga olivacea (Gmelin). SCARLET TANAGER.

Status and Distribution: Summer resident (May to September) in deciduous woods throughout the Basin. This is the only tanager of regular occurrence in the Basin (there are 197 species in the tropics), but the summer tanager (*Piranga rubra*) is found occasionally.

Diet: Primarily insects (especially those on oaks), including some beneficial parasitic Hymenoptera. Some fruit also taken.

FRINGILLIDAE - GROSBEAKS, BUNTINGS, FINCHES, SPARROWS

This large and confusing family, comprised of more than 400 species, is well represented in the Basin, where more than 40 species have been recorded. The following are those of chief interest.

Cardinalis cardinalis (Linnaeus). CARDINAL.

Status and Distribution: Common permanent resident in the southern half of the Basin; essentially nonmigratory. More northern outposts are scattered.

Diet: Feeds its young on insects (caterpillars), but otherwise eats mainly seeds and wild fruit.

Pheucticus ludovicianus (Linnaeus). ROSE-BREASTED GROSBEAK.

Status and Distribution: Common summer resident (late April to October) throughout the Basin, rare in winter.

Diet: Despite a large and powerful beak, denoting seed-crushing ability, it eats nearly equal proportions of plant and animal food, the latter comprised almost entirely of insects.

Passerina cyanea (Linnaeus). INDIGO BUNTING.

Status and Distribution: Common summer resident (May to September) in most of the Basin; less numerous in the north.

Diet: More insectivorous than the two preceding species, but it takes a considerable variety of weed seeds, grain, and wild fruit.

Hesperiphona vespertina (Cooper). EVENING GROSBEAK.

Status and Distribution: Mainly a winter visitor (rare to abundant) over most of the Basin, but breeds in some of the northern counties.

Diet: Noted chiefly for its domination of winter feeding stations, where it consumes tons of sunflower seeds provided by appreciative but sometimes reluctant owners. In the wild, the grosbeak feeds on the seeds (samara) of maple, box elder, and ash, and a variety of fruits. Also consumes spring buds of fruit trees as well as insects, including cankerworms.

Carpodacus purpureus (Gmelin). PURPLE FINCH.

Status and Distribution: Common transient and winter visitor in southern portions of the Basin; summer resident in the north, particularly in spruce and balsam bogs.

Diet: Primarily seeds, fruit, and buds of both wild and commercial trees.

Comments: Its habit of eating the buds on orchard trees is sometimes destructive, but occasionally results in beneficial pruning.

Pinicola enucleator (Linnaeus). PINE GROSBEAK.

Status and Distribution: Winter visitor, rare to uncommon most winters, but periodically staging minor invasions.

Diet: Feeds mainly on buds and fruit of a great variety of deciduous and coniferous trees.

Comments: One black mark is its depredations in Christmas tree plantations, where it feeds on the terminal buds, deforming the leaders on the trees.

Carduelis flammea (Linnaeus). COMMON REDPOLL.

Status and Distribution: A winter visitor from the Arctic, rare or absent some winters, abundant in others (*e.g.* 1971-1972).

Diet: Almost exclusively a seed-eater, it consumes weed seeds and catkins of birches and alder during winter in the Basin.

Carduelis tristis (Linnaeus). AMERICAN GOLDFINCH.

Status and Distribution: Common permanent resident, nesting over most of the Basin (fewer in the northern parts) and wintering, often in large flocks, over the more southern parts.

Diet: Goldfinches are almost exclusively seed-eaters, even feeding their young by regurgitation of predigested seeds.

Loxia curvirostra Linnaeus. RED CROSSBILL.

Loxia leucoptera Gmelin. WHITE-WINGED CROSSBILL.

Status and Distribution: Irregular winter visitors to the coniferous forests of the northern states; the red is more common than the white-winged in the Basin.

Habits: There are scattered nesting records for both species, but nesting is unpredictable as to time and place.

Diet: Crossbills pry open the scales on the cones of coniferous trees and cut out the seed with their crossed bills.

Pipilo erythrophthalmus (Linnaeus). RUFOUS-SIDED (RED-EYED) TOWHEE.

Status and Distribution: Common summer resident in the southern half of the Basin, less common in the north.

Habitat: Typically a forest-edge species, occupying lanes and borders.

Diet: A ground feeder, kicking over leaves by jumping forward and scratching backwards with both feet simultaneously (as do most sparrows). Uncovers insects, worms, and seeds by this method. Total diet, however, includes more plant matter than animal.

Passerculus sandwichensis (Gmelin). SAVANNAH SPARROW.

Status and Distribution: Common summer resident over most of the Basin; less common in southern parts than in northern parts.

Diet: Both animal (insects) and plant matter (seeds), with animal matter predominating.

Pooecetes gramineus (Gmelin). VESPER SPARROW.

Status and Distribution: Common summer resident over whole area.

Diet: Both animal (insects) and plant matter (seeds), with animal matter predominating. Most granivorous of the grassland sparrows.

Junco hyemalis (Linnaeus). DARK-EYED (SLATE-COLORED) JUNCO.

Status and Distribution: Abundant transient. A regular summer resident in the northern counties and a winter resident or visitor in the southern parts.

Habitat: Woodlands, bogs, and brushy borders.

Diet: Primarily ground-feeding seed-eaters, except in summer when about one-half of diet is insects.

Spizella arborea (Wilson). TREE SPARROW.

Status and Distribution: Common transient, nesting in the Arctic and wintering over most of the southern half of the Basin.

Habitat: Chiefly in brush-grown fields and open woods.

Diet: Seeds and insects.

Spizella passerina (Bechstein). CHIPPING SPARROW.

Status and Distribution: Common summer resident (mid-April to October) throughout the Basin.

Habitat: Gardens, orchards, estates, and open areas where there are trees.

Diet: Both animal and plant matter, the latter predominating except during nesting.

Spizella pusilla (Wilson). FIELD SPARROW.

Status and Distribution: Common summer resident over most of the Basin, early April to November; less common in the northern sections. A few winter in southern sections.

Habitat: Brush fields and pastures.

Diet: Mixed diet of insects and seeds, with plant matter predominating slightly.

Zonotrichia leucophrys (Forster). WHITE-CROWNED SPARROW.

Status and Distribution: Fairly common transient in spring and fall, a few remaining over winter in the extreme southern parts of the Basin.

Diet: Chiefly seeds and fruit during its stay in the Basin, but consumes insects and, strangely, quantities of the capsules of hairy-cap moss (*Polytrichum*) in spring and summer (Clement, 1968). Sometimes it cleans up grass seed on newly planted lawns.

Zonotrichia albicollis (Gmelin). WHITE-THROATED SPARROW.

Status and Distribution: Abundant transient. Common summer resident in the northern counties, uncommon winter resident or straggler in the south.

Habitat: Woodlands and bogs for nesting.

Diet: Year-round diet is predominantly herbivorous (seeds, grain, fruit). Insect consumption in late spring.

Passerella iliaca (Merrem). FOX SPARROW.

Status and Distribution: Regular transient, usually not very common.

Habitat: Open woods, forest edge, and old fields.

Diet: Consists (except during nesting) primarily of seeds, especially ragweed and smartweed (*Polygonum*). Obtains food by scratching vigorously with both feet in unison.

Melospiza georgiana (Latham). SWAMP SPARROW.

Status and Distribution: Common summer resident, sometimes remaining over winter.

Habitat: Marshes and swamps.

Diet: Unlike other sparrows, it feeds mainly on insects--more than 80% in the spring and summer, and many also in winter.

Melospiza melodia (Wilson). SONG SPARROW.

Status and Distribution: Common to abundant summer resident over most of the Basin, less common in the northern sections. Many remain over winter, especially in swamps and along brushy borders of rivers.

Diet: Year-round diet is comprised of about 30% animal and 70% plant matter.

Plectrophenax nivalis (Linnaeus). SNOW BUNTING.

Status and Distribution: Irregular winter visitor, usually common, sometimes abundant. Flocks of hundreds often reported.

Diet: Winter diet is primarily grass and weed seeds.

Table 4. Birds of the Lake Michigan Drainage Basin*

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
GAVIIDAE	LOONS				
Gavia immer (Brünnich)	Common loon	Regular summer resident in northern parts	Mar-Nov (winter)	Open water of larger lakes	Fish
Gavia stellata (Pontoppidan)	Red-throated loon	Rare transient and winter visitor	Spring and fall (winter)	Lake Michigan, rarer inland	Fish
PODICIPEDIDAE	GREBES				
Podiceps grisegena (Boddaert)	Red-necked grebe	Uncommon transient	Spring and fall	Lake Michigan, rare inland	Fish, invertebrates
Podiceps auritus (Linnaeus)	Horned grebe	Common transient	Mar-May, Oct-Dec	Lakes	Fish, invertebrates
Podilymbus podiceps (Linnaeus)	Pied-billed grebe	Common summer resident in south, uncommon north	Mar-Nov (winter)	Lakes, rivers, potholes	Aquatic animals
PELECANIDAE	PELICANS				
Pelecanus erythrorhynchos Gmelin	White pelican	Rare visitor (~20 records)	Spring, summer, fall	Lakes, rivers	Fish
PHALACROCORACIDAE	CORMORANTS				
Phalacrocorax auritus (Lesson)	Double-crested cormorant	Uncommon transient, rare summer resident	Spring (rare), fall (uncommon)	Lakes, rivers, swamps	Fish
ARDEIDAE	HERONS, EGRETS, BITTERNS				
Ardea herodias Linnaeus	Great blue heron	Summer resident throughout Basin	Mar-Nov (winter)	Rivers, swamps	Miscellaneous vertebrates
Butorides striatus (Linnaeus)	Green heron	Common summer resident in south, rare in north	Apr-Oct	Rivers, swamps	Aquatic animals
Florida caerulea (Linnaeus)	Little blue heron	Rare to uncommon summer visitor	Mostly Jul-Sep	Water borders	Aquatic animals
Casmerodius albus (Linnaeus)	Great egret	Postbreeding summer visitor, sometimes common	Jul-Sep (spring)	Water areas	Fish, frogs
Egretta thula (Molina)	Snowy egret	Rare summer visitor	Jul-Sep (spring)	Water areas	Aquatic animals
Bubulcus ibis (Linnaeus)	Cattle egret	Recent invader	Summer (nests outside Basin)	Fields, pastures	Insects
Nycticorax nycticorax (Linnaeus)	Black-crowned night heron	Summer resident, formerly common in southern parts	Apr-Oct	Aquatic areas	Miscellaneous vertebrates

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
ARDEIDAE (contd.)	HERONS, EGRETS, BITTERNS				
Ixobrychus exilis (Gmelin)	Least bittern	Summer resident, uncommon in south, rare in north	May-Sep	Cattail marshes	Invertebrates and fish
Botaurus lentiginosus (Rackett)	American bittern	Common summer resident	Apr-Oct	Marshes	Miscellaneous vertebrates
ANATIDAE	SWANS, GEESE, DUCKS				
Cygnus olor (Gmelin)	Mute swan	Introduced permanent resident, locally common	Jan-Dec	Lakes (abundant Grand Traverse Bay)	Aquatic vegetation
Olor columbianus (Ord)	Whistling swan	Regular transient (common east of Basin)	Mar-Apr, Oct-Nov	Lake Michigan	Aquatic vegetation
Branta canadensis (Linnaeus)	Canada goose	Common transient, established summer resident	Jan-Dec	Lakes, rivers	Aquatic vegetation, field grains
Branta bernicla (Linnaeus)	Brant	Rare visitor	Spring, fall	Lakes, shores	Aquatic vegetation
Chen caerulescens (Linnaeus)	Snow (blue) goose	Uncommon transient (infrequent stopovers)	Spring, fall	Lakes, shores	Aquatic vegetation
Anas platyrhynchos Linnaeus	Mallard	Common permanent resident	Jan-Dec	Aquatic areas	Insects (young), vegetation (adults)
Anas rubripes Brewster	Black duck	Formerly common permanent resident, now uncommon	Jan-Dec (local in winter)	Aquatic areas	Insects (young), vegetation (adults)
Anas strepera Linnaeus	Gadwall	Uncommon transient	Spring, fall (summer, winter)	Aquatic areas	Aquatic vegetation
Anas acuta Linnaeus	Pintail	Common transient, occasional summer resident, winter resident	Mar-Apr, Sep-Nov	Aquatic areas	Aquatic vegetation
Anas crecca Linnaeus	Green-winged teal	Uncommon transient and summer resident	Apr-Nov	Aquatic areas	Aquatic vegetation
Anas discors Linnaeus	Blue-winged teal	Common transient and summer resident	Apr-Sep (Mar, Oct)	Potholes, marshes	Aquatic vegetation
Anas clypeata (Linnaeus)	Northern shoveler	Uncommon transient, rare summer resident	Apr-Oct (winter)	Aquatic areas	Aquatic vegetation

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
ANATIDAE (contd.)	SWANS, GEESE, DUCKS				
Anas penelope (Linnaeus)	European wigeon	Rare visitor	Spring, fall	Aquatic areas	Aquatic vegetation
Anas americana (Gmelin)	American wigeon	Common transient, uncommon summer resident	Apr-Oct (winter)	Aquatic areas	Aquatic vegetation
Aix sponsa (Linnaeus)	Wood duck	Summer resident, locally common	Apr-Oct	Swamps, woods	Vegetation (nuts)
Aythya americana (Eyton)	Redhead	Common transient, uncommon summer and winter resident	Jan-Dec	Larger bodies of water	Mixed animals and vegetation
Aythya collaris (Donovan)	Ring-necked duck	Common transient, uncommon summer and winter resident	Mostly spring and fall	Lakes (large and small)	Mixed animals and vegetation
Aythya valisineria (Wilson)	Canvasback	Regular transient, rare summer and winter resident	Early spring to late fall	Larger bodies of water	Mixed animals and vegetation
Aythya marila (Linnaeus)	Greater scaup	Uncommon transient	Spring, fall	Open bodies of water	Mixed animals and vegetation
Aythya affinis (Eyton)	Lesser scaup	Common transient, occasional summer and winter resident	Jan-Dec	Open bodies of water	Mixed animals and vegetation
Bucephala clangula (Linnaeus)	Common goldeneye	Common transient and and winter resident, uncommon summer resident	Jan-Dec	Larger bodies of water	Aquatic invertebrates
Bucephala albeola (Linnaeus)	Bufflehead	Common transient, uncommon winter resident	Mar-May, Sep-Nov	Larger bodies of water	Aquatic invertebrates
Clangula hyemalis (Linnaeus)	Oldsquaw	Abundant transient and winter resident on Lake Michigan	Jan-Dec	Lake Michigan (deep water)	Mollusks, crustaceans, animal matter
Somateria spp.	Eider ducks (2 species)	Rare winter visitors	Jan, Mar, Nov, Dec	Lake Michigan	Animal matter
Melanitta deglandi (Bonaparte)	White-winged scoter	Common fall transient, rare in spring	Spring and fall (winter)	Lake Michigan	Animal matter
Melanitta perspicillata (Linnaeus)	Surf scoter	Uncommon transient	Mostly late fall	Larger lakes	Animal matter
Melanitta nigra (Linnaeus)	Black scoter	Rare transient	Mostly fall	Larger lakes	Animal matter

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
ANATIDAE (contd.)	SWANS, GEESE, DUCKS				
Oxyura jamaicensis (Gmelin)	Ruddy duck	Uncommon transient (locally common)	Spring, fall (summer, winter)	Lakes and rivers	Mixed animals and vegetation
Lophodytes cucullatus (Linnaeus)	Hooded merganser	Uncommon transient (sometimes common)	Apr-Oct (winter)	Lakes and rivers	Fish, invertebrates
Mergus merganser Linnaeus	Common merganser	Common transient and winter resident, summer resident	Jan-Dec	Larger lakes, rivers	Fish
Mergus serrator Linnaeus	Red-breasted merganser	Common transient, uncommon summer resident	Jan-Dec	Mostly on Lake Michigan	Fish
CATHARTIDAE	AMERICAN VULTURES				
Cathartes aura (Linnaeus)	Turkey vulture	Uncommon to common summer resident	Late Mar-Oct	Roadsides, open areas	Carrion
ACCIPITRIDAE	HAWKS, EAGLES, HARRIERS				
Accipiter gentilis (Linnaeus)	Goshawk	Rare summer resident and winter visitor	Jan-Dec	Undisturbed woods	Vertebrates (grouse)
Accipiter striatus Vieillot	Sharp-shinned hawk	Formerly common transient, rare summer resident	Mar-Nov (winter)	Undisturbed woods	Small birds
Accipiter cooperii (Bonaparte)	Cooper's hawk	Formerly common permanent resident	Jan-Dec	Woods	Birds
Buteo jamaicensis (Gmelin)	Red-tailed hawk	Common permanent resident	Jan-Dec	Woods, oak openings	Mammals
Buteo lineatus (Gmelin)	Red-shouldered hawk	Formerly common summer resident, now uncommon	Mar-Nov	Woods, openings	Mammals, reptiles
Buteo platypterus (Vieillot)	Broad-winged hawk	Common transient, uncommon summer	Apr-Oct (Great Lakes migration)	Northern woods	Vertebrates, insects
Buteo lagopus (Pontoppidan)	Rough-legged hawk	Irregular winter visitor	Oct-May	Hunts open fields	Vertebrates, mice
Aquila chrysaetos (Linnaeus)	Golden eagle	Rare visitor	Mostly Oct-Feb	Open areas	Mammals
Haliaeetus leucocephalus (Linnaeus)	Bald eagle	Uncommon summer resident in north and winter resident in south	Jan-Dec	Mostly around lakes	Fish, carrion
Circus cyaneus (Linnaeus)	Marsh hawk	Declining summer resident, uncommon winter resident	Jan-Dec	Marshes	Miscellaneous vertebrates

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
PANDIONIDAE	OSPREYS				
Pandion haliaetus (Linnaeus)	Osprey	Uncommon transient in south, uncommon summer resident in north	Apr-Oct	Lakes, floodings	Fish
FALCONIDAE	FALCONS				
Falco peregrinus Tunstall	Peregrine falcon	Rare transient, formerly rare summer resident	Mar-Nov	Open areas	Birds, mammals
Falco columbarius Linnaeus	Merlin	Rare transient and summer resident in north	Apr-Oct	Woods	Birds, rodents
Falco sparverius Linnaeus	American kestrel	Common summer resident, winter resident in south	Jan-Dec	Roadsides, borders	Mice, birds, insects
TETRAONIDAE	GROUSE				
Canachites canadensis (Linnaeus)	Spruce grouse	Local permanent resident in north	Jan-Dec	Coniferous woods	Buds, browse
Bonasa umbellus (Linnaeus)	Ruffed grouse	Common permanent resident	Jan-Dec	Coniferous and deciduous woods	Buds, browse
Tympanuchus cupido (Linnaeus)	Greater prairie chicken	Rare permanent resident (1 colony left in Michigan, more in Wisconsin)	Jan-Dec	Prairie openings	Browse
Pedioecetes phasianellus (Linnaeus)	Sharp-tailed grouse	Locally common permanent resident	Jan-Dec	Bushy openings	Browse
PHASIANIDAE	QUAILS, PHEASANTS				
Colinus virginianus (Linnaeus)	Bobwhite	Uncommon permant resident in south	Jan-Dec	Fields, borders	Seeds, grain, insects
Phasianus colchicus Linnaeus	Ring-necked pheasant	Common permanent resident, south half	Jan-Dec	Fields, borders	Seeds and grain
MELEAGRIDIDAE	TURKEYS				
Meleagris gallopavo Linnaeus	Wild turkey	Local permanent resident	Jan-Dec	Oak-hickory woods	Mast
GRUIDAE	CRANES				
Grus canadensis (Linnaeus)	Sandhill crane	Local summer resident, several "colonies"	Late Mar-Oct	Marshes	Plant and animal matter

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
RALLIDAE	RAILS, GALLINULES, COOTS				
Rallus elegans Audubon	King rail	Uncommon summer resident in southern parts	Apr-Oct (winter)	Marshes	Plant and animal matter
Rallus limicola Vieillot	Virginia rail	Regular summer resident in south, uncommon in north	Mar-Nov (winter)	Marshes	Insects, seeds
Porzana carolina (Linnaeus)	Sora	Common summer resident, less common in north	Mar-Nov (winter)	Marshes	Seeds, insects
Coturnicops noveboracensis (Gmelin)	Yellow rail	Rare transient in south, rare summer resident in north	Apr-Sep	Marshes	Plant and animal matter
Laterallus jamaicensis (Gmelin)	Black rail	Rare summer resident in south	May, Sep (few records)	Marshes	Plant and animal matter
Gallinula chloropus (Linnaeus)	Common gallinule	Uncommon summer resident in south	Apr-Oct	Marshes	Marsh vegetation
Fulica americana Gmelin	American coot	Common transient and summer resident	Mar-Nov (winter)	Lakes, rivers, marshes	Marsh vegetation
CHARADRIIDAE	PLOVERS, TURNSTONES				
Charadrius semipalmatus Bonaparte	Semipalmated plover	Common transient throughout	May, Aug-Sep	Shores, mud flats	Insects
Charadrius melodus Ord	Piping plover	Rare summer resident on shores of Lake Michigan	May-Sep	Sand beaches	Insects
Charadrius vociferus Linnaeus	Killdeer	Common summer resident throughout	Mar-Nov (winter)	Beaches, fields marshes	Insects
Pluvialis dominica (Müller)	American golden plover	Uncommon transient, mostly fall	May, Sep	Lakeshores	Insects, fruit
Pluvialis squatarola (Linnaeus)	Black-bellied plover	Uncommon transient	May, Sep	Lakeshores (Lake Michigan)	Insects
SCOLOPACIDAE	SANDPIPERS, ALLIES				
Arenaria interpres (Linnaeus)	Ruddy turnstone	Uncommon transient (sometimes common)	May, Sep	Shores, especially Lake Michigan	Animal matter
Philohela minor (Gmelin)	American woodcock	Common summer resident throughout	Late Mar-Nov	Swamps	Worms, insects
Capella gallinago (Linnaeus)	Common snipe	Common transient, local summer resident	Apr-Nov	Swamps, shores	Animal matter

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
SCOLOPACIDAE (contd.)	SANDPIPERS, ALLIES				
Numenius phaeopus (Linnaeus)	Whimbrel	Uncommon transient	May, Sep	Shores, mostly Lake Michigan	Animal matter
Bartramia longicauda (Bechstein)	Upland sandpiper	Uncommon local summer resident	Apr-Oct	Old fields, pastures	Animal matter
Actitis macularia (Linnaeus)	Spotted sandpiper	Common summer resident throughout	Late Apr to mid-Sep	Beaches, river banks	Animal matter
Tringa solitaria Wilson	Solitary sandpiper	Common transient, especially fall	Late Apr-May, Jul-Sep	Shores, wet areas	Animal matter
Tringa melanoleuca (Gmelin)	Greater yellowlegs	Common transient	Apr-Jun, Jul-Oct	Lakes, marshes	Animal matter
Tringa flavipes (Gmelin)	Lesser yellowlegs	Common transient	May-Jun, Jul-Sep	Lakes, marshes	Animal matter
Catoptrophorus semipalmatus (Gmelin)	Willet	Rare transient or visitor	Jul, Aug	Shores of Lake Michigan	Animal matter
Calidris canutus (Linnaeus)	Red knot	Uncommon transient	May, Aug-Sep	Shores of Lake Michigan	Animal matter
Calidris maritima (BrÜnnich)	Purple sandpiper	Rare winter visitor (Muskegon)	Several Jan records (Apr)	Rocky beaches	Animal matter
Calidris melanotos (Vieillot)	Pectoral sandpiper	Common transient	Apr-May, Jul-Sep	Lakeshores, mud flats	Animal matter
Calidris fuscicollis (Vieillot)	White-rumped sandpiper	Uncommon transient Aug-Sep	May, Aug-Sep	Lakeshores, mud flats	Animal matter
Calidris bairdii (Coues)	Baird's sandpiper	Uncommon transient	May, Aug-Sep	Lakeshores, mud flats	Animal matter
Calidris minutilla (Vieillot)	Least sandpiper	Common transient	May, Jul-Sep	Lakeshores, mud flats	Animal matter
Calidris alpina (Linnaeus)	Dunlin	Common transient	Late Apr-Jun, Jul-Sep	Lakeshores, mud flats	Animal matter
Calidris pusillus (Linnaeus)	Semipalmated sandpiper	Common transient	May, Aug-Sep	Lakeshores, mud flats	Animal matter
Calidris mauri Cabanis	Western sandpiper	Rare (?) transient	May, Aug-Sep	Lakeshores, mud flats	Animal matter
Calidris alba (Pallas)	Sanderling	Common transient	May, Aug-Sep	Shores of Lake Michigan	Animal matter
Limnodromus griseus (Gmelin) *Limnodromus scolopaceus* (Say)	Dowitchers (2 species)	Uncommon transients	May, Aug-Sep	Lakeshores, mud flats	Animal matter

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
SCOLOPACIDAE (contd.)	SANDPIPERS, ALLIES				
Micropalama himantopus (Bonaparte)	Stilt sandpiper	Uncommon transient	May, Aug-Sep	Lakeshores, mud flats	Animal matter
Tryngites subruficollis (Vieillot)	Buff-breasted sandpiper	Rare transient in fall	29 Jul-29 Sep	Lakeshores	Animal matter
Limosa fedoa (Linnaeus)	Marbled godwit	Rare transient	Late May, Aug-Sep	Lakeshores, mud flats	Animal matter
Limosa haemastica (Linnaeus)	Hudsonian godwit	Rare transient	May, Sep	Lakeshores, mud flats	Animal matter
RECURVIROSTRIDAE	AVOCETS				
Recurvirostra americana Gmelin	American avocet	Rare visitor	Summer, fall	Shores of Lake Michigan	Animal matter
PHALAROPODIDAE	PHALAROPES				
Steganopus tricolor Vieillot	Wilson's phalarope	Rare and local summer resident	May-Sep	Shores of Lake Michigan	Animal matter
Lobipes lobatus (Linnaeus)	Northern phalarope	Rare transient	Late Apr-May, Late Aug-Nov	Lakeshores	Animal matter
STERCORARIIDAE	JAEGERS				
Stercorarius spp.	Jaegers (3 species)	Rare visitors (few records)	Any season	Mostly Lake Michigan	Rob other birds of fish
LARIDAE	GULLS, TERNS				
Larus hyperboreus Gunnerus	Glaucous gull	Rare visitor	Mostly winter	Along Lake Michigan	Fish (scavengers)
Larus glaucoides Meyer	Iceland gull	Rare visitor	Mostly winter	Along Lake Michigan	Fish (scavengers)
Larus marinus Linnaeus	Great black-backed gull	Uncommon but regular winter visitor	Dec-late Mar	Along Lake Michigan	Robs other gulls
Larus argentatus Pontoppidan	Herring gull	Locally abundant	Jan-Dec	Larger lakes and rivers	Fish (scavengers)
Larus delawarensis Ord	Ring-billed gull	Common summer resident	Jan-Dec	Lakes, harbors, rivers	Fish (scavengers
Larus philadelphia (Ord)	Bonaparte's gull	Common transient	Apr-May, Jul-Oct	Larger lakes, rivers	Animal matter
Sterna forsteri Nuttall	Forster's tern	Uncommon transient, rare summer resident in Wisconsin	Apr-Sep	Lake Michigan, inland lakes	Fish

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
LARIDAE (contd.)	GULLS, TERNS				
Sterna hirundo Linnaeus	Common tern	Common transient	Apr-Sep	Lakes, marshes	Fish
Sterna caspia (Pallas)	Caspian tern	Uncommon transient and local summer resident	Apr-Sep	Along Lake Michigan	Fish
Chlidonias niger (Linnaeus)	Black tern	Common summer resident, especially south	Late Apr	Marshes	Animal matter
COLUMBIDAE	PIGEONS, DOVES				
Zenaida macroura (Linnaeus)	Mourning dove	Common summer resident, mostly south	Mar-Nov (winter)	Borders, farms	Grain, seeds
CUCULIDAE	CUCKOOS				
Coccyzus americanus (Linnaeus)	Yellow-billed cuckoo	Common summer resident in south half, uncommon in north	Mid-May to Sep	Woods, borders	Insects. caterpillars
Coccyzus erythropthalmus (Wilson)	Black-billed cuckoo	Common summer resident throughout	Mid-May to Sep	Woods, borders	Insects, caterpillars
TYTONIDAE	BARN OWLS				
Tyto alba (Scopoli)	Barn owl	Rare permanent resident	Jan-Dec	Farms (barns), field borders	Mice (∿90%)
STRIGIDAE	TYPICAL OWLS				
Otus asio (Linnaeus)	Screech owl	Uncommon to rare permanent resident in south	Jan-Dec	Parks, cemeteries	Mice, birds, insects
Bubo virginianus (Gmelin)	Great horned owl	Common permanent resident	Jan-Dec	Woods	Rabbits, vertebrates
Nyctea scandiaca (Linnaeus)	Snowy owl	Irregular winter visitor	Oct-Apr	Open places	Miscellaneous vertebrates
Surnia ulula (Linnaeus)	Hawk owl	Very rare fall and winter visitor	Oct-Apr	Coniferous woods	Miscellaneous vertebrates
Strix varia Barton	Barred owl	Formerly common permanent resident, now uncommon	Jan-Dec	Deciduous woods	Mice
Strix nebulosa Forster	Great gray owl	Very rare in northern parts	Oct-Apr	Woods	Miscellaneous vertebrates
Asio otus (Linnaeus)	Long-eared owl	Uncommon visitor, local summer resident	Jan-Dec	Woods, swamps	Mice, shrews

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
STRIGIDAE (contd.)	TYPICAL OWLS				
Asio flammeus (Pontoppidan)	Short-eared owl	Uncommon visitor, local summer resident	Jan-Dec	Fields, marshes	Mice
Aegolius funereus (Linnaeus)	Boreal owl	Rare winter visitor	Late Oct-early May	Coniferous woods	Small vertebrates
Aegolius acadicus (Gmelin)	Saw-whet owl	Uncommon and local permanent resident	Jan-Dec	Woods, swamps	Small vertebrates
CAPRIMULGIDAE	GOATSUCKERS				
Caprimulgus vociferus Wilson	Whip-poor-will	Summer resident, locally common	Late Apr-Sep	Woods, hunts in open	Insects (moths)
Chordeiles minor (Forster)	Common nighthawk	Common summer resident	Mid May-Sep	Cities, sand flats	Insects (mosquitos)
APODIDAE	SWIFTS				
Chaetura pelagica (Linnaeus)	Chimney swift	Common summer resident	Late Apr-Sep	Cities, towns	Insects, arachnids
TROCHILIDAE	HUMMINGBIRDS				
Archilochus colubris (Linnaeus)	Ruby-throated hummingbird	Common summer resident in south	May-Sep	Gardens, woods	Nectar, insects
ALCEDINIDAE	KINGFISHERS				
Megaceryle alcyon (Linnaeus)	Belted kingfisher	Common summer resident, uncommon winter resident	Jan-Dec	Lakes, streams	Fish
PICIDAE	WOODPECKERS				
Colaptes auratus (Linnaeus)	Common flicker	Common summer resident, uncommon winter resident	Jan-Dec	Woods, borders	Ants, beetles
Dryocopus pileatus (Linnaeus)	Pileated woodpecker	Uncommon permanent resident in north	Jan-Dec	Woods	Carpenter ants, beetles, fruit
Melanerpes carolinus (Linnaeus)	Red-bellied woodpecker	Fairly common permanent resident in south	Jan-Dec	Oak-hickory woods	Mast, insects
Melanerpes erythrocephalus (Linnaeus)	Red-headed woodpecker	Common summer resident (south), uncommon permanent resident (south)	Jan-Dec	Oak-hickory woods	Fruit, nuts, insects

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
PICIDAE (contd.)	WOODPECKERS				
Sphyrapicus varius (Linnaeus)	Yellow-bellied sapsucker	Common summer resident in north, winter resident in south	Jan-Dec	Beech-maple woods	Sap, cambium, insects
Picoides villosus (Linnaeus)	Hairy woodpecker	Uncommon to common permanent resident throughout	Jan-Dec	Undisturbed woods	Wood-boring insects, suet
Picoides pubescens (Linnaeus)	Downy woodpecker	Common permanent resident	Jan-Dec	Open woods	Wood-boring insects, suet
Picoides arcticus (Swainson)	Black-backed three-toed woodpecker	Uncommon and local permanent resident in north	Jan-Dec	Woods, swamps	Bark beetles
Picoides tridactylus (Linnaeus)	Northern three-toed woodpecker	Rare and local winter visitor in north	Oct-Feb	Undisturbed woods	Bark beetles
TYRANNIDAE	NEW WORLD FLYCATCHERS				
Tyrannus tyrannus (Linnaeus)	Eastern kingbird	Common summer residents throughout	Early May to early Sep	Roadsides, borders	Insects
Tyrannus verticalis Say	Western kingbird	Rare summer resident	Summer	Borders	Insects
Myiarchus crinitus (Linnaeus)	Great crested flycatcher	Common summer resident in south	Early May-Sep	Woods, borders	Insects
Sayornis phoebe (Latham)	Eastern phoebe	Formerly common summer resident, now uncommon	Late Mar-Oct	Farms, bridges	Insects
Empidonax flaviventris (Baird and Baird)	Yellow-bellied flycatcher	Uncommon transient, rare summer resident in north	Late May-Aug	Swamps, bogs	Insects
Empidonax virescens (Vieillot)	Acadian flycatcher	Uncommon summer resident in south	Late May-Aug	Dry woods	Insects
Empidonax traillii (Audubon)	Willow flycatcher	Common summer resident in south	Late May-Aug	Alder and willow swamps	Insects
Empidonax alnorum Brewster	Alder flycatcher	Rare and local summer resident in north	Late May-Aug	Wooded swamps	Insects
Empidonax minimus (Baird and Baird)	Least flycatcher	Common summer resident, especially in north	May-Sep	Open woods	Insects
Contopus virens (Linnaeus)	Eastern wood pewee	Common summer resident throughout	Mid-May to Sep	Woods	Insects

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
TYRANNIDAE (contd.)	NEW WORLD FLYCATCHERS				
Nuttallornis borealis (Swainson)	Olive-sided flycatcher	Uncommon transient in south, uncommon summer resident in north	Late May-Aug	Bogs, undisturbed woods	Insects
ALAUDIDAE	LARKS				
Eremophila alpestris (Linnaeus)	Horned lark	Common summer resident, common winter resident in south	Jan-Dec	Fields	Seeds, insects
HIRUNDINIDAE	SWALLOWS				
Iridoprocne bicolor (Vieillot)	Tree swallow	Common summer resident	Late Mar-Oct	Farms, borders, swamps	Insects
Riparia riparia (Linnaeus)	Bank swallow	Common summer resident colonies	Late Apr-Sep	Banks, dugouts	Insects
Stelgidopteryx ruficollis (Vieillot)	Rough-winged swallow	Common summer resident except in north	Mid-Apr to Sep	Dugouts, stonewalls	Insects
Hirundo rustica Linnaeus	Barn swallow	Common summer resident throughout	Mid-Apr to Sep	Farms, open spaces	Insects
Petrochelidon pyrrhonota (Vieillot)	Cliff swallow	Uncommon and local summer resident	May-Sep	Farms, Wisconsin Dells	Insects
Progne subis (Linnaeus)	Purple martin	Common summer resident in south, uncommon in north	Mid-Apr to Sep	Borders of lakes and farms	Insects
CORVIDAE	CROWS, JAYS				
Perisoreus canadensis (Linnaeus)	Gray jay	Rare and local permanent resident in north	Jan-Dec	Deep woods, swamps	Plant and animal matter
Cyanocitta cristata (Linnaeus)	Blue jay	Common to abundant permanent resident	Jan-Dec	Mostly woods	Plant and animal matter
Corvus corax Linnaeus	Common raven	Uncommon permanent resident in north	Jan-Dec	Woods, cliffsides	Pland and animal matter
Corvus brachyrhynchos Brehm	Common crow	Common to abundant permanent resident in south, summer resident in north	Jan-Dec	Woods, fields	Plant and animal matter
PARIDAE	CHICKADEES, TITMICE				
Parus atricapillus Linnaeus	Black-capped chickadee	Common to abundant permanent resident throughout	Jan-Dec	Woods, gardens	Insects, seeds

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
PARIDAE (contd.) *Parus hudsonicus* Forster	CHICKADEES, TITMICE Boreal chickadee	Uncommon winter visitor and local permanent resident in north	Jan-Dec	Woods	Plant and animal matter
Parus bicolor Linnaeus	Tufted titmouse	Common permanent resident in south	Jan-Dec	Deciduous woods	Seeds, insects
SITTIDAE *Sitta carolinensis* Latham	NUTHATCHES White-breasted nuthatch	Common permanent resident in south, uncommon in north	Jan-Dec	Woods, borders	Seeds, insects
Sitta canadensis Linnaeus	Red-breasted nuthatch	Permanent resident in north, winter visitor in south	Jan-Dec	Coniferous woods	Seeds of cones
CERTHIIDAE *Certhia familiaris* Linnaeus	CREEPERS Brown creeper	Permanent resident in north, winter visitor in south	Jan-Dec	Woods	Insects
TROGLODYTIDAE *Troglodytes aedon* Vieillot	WRENS House wren	Common summer resident in south, uncommon in north	Late Apr-Oct	Gardens, roadsides	Insects, arachnids
Troglodytes troglodytes (Linnaeus)	Winter wren	Summer resident in north, uncommon winter resident in south	Jan-Dec	Deep woods, bogs	Insects
Thryomanes bewickii (Audubon)	Bewick's wren	Rare and irregular permanent resident in south	Jan-Dec	Woodland thickets	Insects
Cistothorus palustris (Wilson)	Long-billed marsh wren	Summer resident in south, rare and local in north	Late Apr-Sep	Cattail and sedge marshes	Insects
Cistothorus platensis (Latham)	Short-billed marsh wren	Locally common summer resident throughout	May-Sep	Grassy marshes, meadows	Insects
MIMIDAE	MOCKINGBIRDS, CATBIRDS, THRASHERS				
Mimus polyglottos (Linnaeus)	Mockingbird	Irregular permanent resident everywhere	Jan-Dec	Suburbs, farms	Fruit, insects
Dumetella carolinensis (Linnaeus)	Gray catbird	Common summer resident in south, uncommon in north	Late Apr-Nov (winter)	Thickets, borders	Insects, fruit

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
MIMIDAE (contd.)	MOCKINGBIRDS, CATBIRDS, THRASHERS				
Toxostoma rufum (Linnaeus)	Brown thrasher	Common summer resident throughout	Mid-Apr to Oct (winter)	Thickets, brushland	Insects
TURDIDAE	THRUSHES, BLUEBIRDS				
Turdus migratorius Linnaeus	American robin	Common summer resident, uncommon winter resident	Mar-Nov	Nearly everywhere	Worms, insects, fruit
Hylocichla mustelina (Gmelin)	Wood thrush	Common summer resident in south, uncommon in north	Late Apr-Sep	Deciduous woods	Insects, fruit
Catharus guttatus (Pallas)	Hermit thrush	Summer resident in north, rare winter resident in south	Early Apr-Oct	Deep woods, jack pines	Insects, fruit
Catharus ustulatus (Nuttall)	Swainson's thrush	Common transient, uncommon summer resident in north	May-Sep	Coniferous woods	Insects, fruit
Catharus minimus (Lafresnaye)	Gray-cheeked thrush	Uncommon transient	May-Sep	Woods	Insects, fruit
Catharus fuscescens (Stephens)	Veery	Common transient and summer resident	May-Sep	Woods, swamps	Insects, fruit
Sialia sialis (Linnaeus)	Eastern bluebird	Formerly common summer resident, uncommon now	Mar-Nov (winter)	Farms, roadsides	Insects (fruit, *etc.* in winter)
SYLVIIDAE	GNATCATCHERS, KINGLETS				
Polioptila caerulea (Linnaeus)	Blue-gray gnatcatcher	Uncommon summer resident in south	Apr-Sep	Deciduous woods	Insects
Regulus satrapa Lichtenstein	Golden-crowned kinglet	Common transient, summer resident in north, winter resident	Jan-Dec	Coniferous woods	Insects
Regulus calendula (Linnaeus)	Ruby-crowned kinglet	Common to abundant transient	Apr-Oct (winter)	Woods, thickets	Insects
MOTACILLIDAE	PIPITS				
Anthus spinoletta (Linnaeus)	Water pipit	Uncommon transient (sometimes common)	Spring, fall	Fields, beaches	Insects
BOMBYCILLIDAE	WAXWINGS				
Bombycilla garrulus (Linnaeus)	Bohemian waxwing	Irregular (rare) winter visitor	Early winter to early spring	Hedgerows, gardens	Fruit
Bombycilla cedrorum Vieillot	Cedar waxwing	Permanent resident	Jan-Dec	Hedgerows, gardens	Fruit

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
LANIIDAE	SHRIKES				
Lanius excubitor Linnaeus	Northern shrike	Rare winter visitor in south, more common in north	Nov-Apr	Fencerows, fields	Mice, birds
Lanius ludovicianus Linnaeus	Loggerhead shrike	Uncommon summer resident, becoming rare	Mar-Nov (winter)	Fencerows, fields	Vertebrates, grasshoppers
STURNIDAE	STARLINGS				
Sturnus vulgaris Linnaeus	Starling	Abundant (introduced) permanent resident	Jan-Dec	Nearly everywhere	Plant and animal matter
VIREONIDAE	VIREOS				
Vireo griseus (Boddaert)	White-eyed vireo	Rare and local summer resident in south	May-Sep	Brushy woods	Insects
Vireo flavifrons Vieillot	Yellow-throated vireo	Summer resident, regular in south, irregular in north	Late Apr-Sep	Woods, borders	Insects
Vireo solitarius (Wilson)	Solitary vireo	Uncommon transient, summer resident in north	Mid-Apr to Oct	Deciduous woods	Insects
Vireo olivaceus (Linnaeus)	Red-eyed vireo	Common to abundant summer resident, especially in north	May-early Oct	Second growth woods, streets	Insects
Vireo philadelphicus (Cassin)	Philadelphia vireo	Uncommon transient	May, Sep	Woods	Insects
Vireo gilvus (Vieillot)	Warbling vireo	Summer resident, common in south	May-Sep	Shade trees, streets	Insects
PARULIDAE	WOOD WARBLERS				
Mniotilta varia (Linnaeus)	Black-and-white warbler	Common transient and summer resident	Late Apr to early Oct	Woods, borders	Insects
Protonotaria citrea (Boddaert)	Prothonotary warbler	Local summer resident in south	Early May-Sep	Along wooded streams	Insects
Vermivora chrysoptera (Linnaeus)	Golden-winged warbler	Common summer resident in south, uncommon in north	Early May-Sep	Thickets, borders	Insects
Vermivora pinus (Linnaeus)	Blue-winged warbler	Uncommon and local summer resident in south	Late Apr-Sep	Thickets, borders, swamps	Insects
Vermivora peregrina (Wilson)	Tennessee warbler	Common to abundant transient	May, Aug-Sep	Woods, borders	Insects, fruit
Vermivora celata (Say)	Orange-crowned warbler	Uncommon transient	Apr-May, Sep-Oct	Woods, borders	Insects

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
PARULIDAE (contd.)	WOOD WARBLERS				
Vermivora ruficapilla (Wilson)	Nashville warbler	Common transient, summer resident in north	Late Apr-Oct	Woods, borders, bogs	Insects
Parula americana (Linnaeus)	Northern parula warbler	Uncommon transient, uncommon summer resident in north	May-Sep	Woods, swamps	Insects
Dendroica petechia (Linnaeus)	Yellow warbler	Common summer resident, especially in south	Late Apr-Oct	Borders, along streams	Insects
Dendroica magnolia (Wilson)	Magnolia warbler	Common transient, uncommon summer resident in north	Early May-Sep	Coniferous stands, bogs	Insects
Dendroica tigrina (Gmelin)	Cape May warbler	Uncommon to common transient	May, Aug-Sep	Woods	Insects
Dendroica caerulescens (Gmelin)	Black-throated blue warbler	Uncommon transient, summer resident in north	May-Sep	Beech-maple woods	Insects
Dendroica coronata (Linnaeus)	Yellow-rumped warbler	Common to abundant transient, summer resident in north	Early Apr-Nov (winter)	Woods, thickets	Insects, fruit
Dendroica virens (Gmelin)	Black-throated green warbler	Common transient, common summer resident in north	Late Apr-Oct	Woods (hemlocks)	Insects
Dendroica cerulea (Wilson)	Cerulean warbler	Uncommon summer resident in south	May-Sep	Chiefly oak-hickory	Insects
Dendroica fusca (Müller)	Blackburnian warbler	Common transient, summer resident in north	May-Oct	Woods (often in pines)	Insects
Dendroica dominica (Linnaeus)	Yellow-throated warbler	Formerly rare summer resident, now rare summer visitor	Spring, summer	Thickets	Insects
Dendroica pensylvanica (Linnaeus)	Chestnut-sided warbler	Common transient, summer resident in north	May-Oct	Undergrowth, borders	Insects
Dendroica castanea (Wilson)	Bay-breasted warbler	Uncommon to common transient	May, Aug-Sep	Woods, borders	Insects
Dendroica striata (Forster)	Blackpoll warbler	Uncommon transient	Mid-May, Jun, Aug, Sep	Coniferous woods	Insects
Dendroica pinus (Wilson)	Pine warbler	Uncommon transient, summer resident in north	Apr-Oct	Pines	Insects

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
PARULIDAE (contd.)	WOOD WARBLERS				
Dendroica kirtlandii (Baird)	Kirtland's warbler	Very rare summer resident in basin; 2 pairs in Wexford Co. in 1974	Mid-May to early Sep	Jack-pine stands	Insects
Dendroica discolor (Vieillot)	Prairie warbler	Rare transient in south, local summer resident in north	May-Sep	Brushlands, jack pines	Insects
Dendroica palmarum (Gmelin)	Palm warbler	Common transient	Mid-Apr to late Oct	Borders, woods	Insects
Seiurus aurocapillus (Linnaeus)	Ovenbird	Common summer resident	Early May-Sep	Cut-over woods--aspens, *etc.*	Invertebrates
Seiurus noveboracensis (Gmelin)	Northern waterthrush	Uncommon transient, summer resident in north	Late Apr-Sep	Swamps, wet brushland	Insects
Seiurus motacilla (Vieillot)	Louisiana waterthrush	Local and rare summer resident in south	Mid-Apr to Jul	Flowing streams	Stoneflies, mayflies
Oporornis formosus (Wilson)	Kentucky warbler	Rare and local summer resident or summer visitor in south	Late Apr-Sep	Thickets, undergrowth	Insects
Oporornis agilis (Wilson)	Connecticut warbler	Rare transient	May, Sep-Oct	Thickets, undergrowth	Insect
Oporornis philadelphia (Wilson)	Mourning warbler	Uncommon transient, uncommon summer resident in north	Late May-Sep	Swamps, marshes	Insects
Geothlypis trichas (Linnaeus)	Common yellowthroat	Common summer resident throughout	Late Apr-Oct	Swamps, marshes	Insects
Icteria virens (Linnaeus)	Yellow-breasted chat	Uncommon and local summer resident in south	May-Sep	Undergrowth, marshes	Insects
Wilsonia citrina (Boddaert)	Hooded warbler	Rare and local summer resident in south	May-Sep	Woods with undergrowth	Insects
Wilsonia pusilla (Wilson)	Wilson's warbler	Uncommon transient	Late May-Sep	Thickets, borders	Insects
Wilsonia canadensis (Linnaeus)	Canada warbler	Uncommon to common transient, summer resident in north	Late May-Sep	Thickets, borders	Insects
Setophaga ruticilla (Linnaeus)	American redstart	Common transient and summer resident	Early May-Sep	Open woods	Insects
PLOCEIDAE	WEAVER FINCHES				
Passer domesticus (Linnaeus)	House sparrow	Abundant (introduced), permanent resident	Jan-Dec	Cities, towns, farms	Plant and animal matter

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*+	*Habitat*	*Chief Food*
ICTERIDAE	MEADOWLARKS, BLACKBIRDS, ORIOLES				
Dolichonyx oryzivorus (Linnaeus)	Bobolink	Common summer resident throughout	Early May-Sep	Fields	Insects, seeds,
Sturnella magna (Linnaeus)	Eastern meadowlark	Common summer resident throughout	Mar-Nov (winter)	Fields	Insects, seeds
Sturnella neglecta Audubon	Western meadowlark	Local summer resident throughout	Mar-Nov	Fields	Insects, seeds
Xanthocephalus xanthocephalus (Bonaparte)	Yellow-headed blackbird	Rare invader, nesting locally	Apr-Sep	Marshes	Plant and animal matter
Agelaius phoeniceus (Linnaeus)	Red-winged blackbird	Abundant transient and summer resident	Mar-Nov	Marshes	Plant and animal matter
Icterus spurius (Linnaeus)	Orchard oriole	Rare, local summer resident in south	May-Sep	Shade trees, borders	Insects, fruit
Icterus galbula (Linnaeus)	Northern oriole	Common summer resident, uncommon in north	Late Apr-Sep	Shade trees, streets	Insects, fruit
Euphagus carolinus (Müller)	Rusty blackbird	Common but irregular transient	Early Apr-Nov	Marshes, swamps	Plant and animal matter
Euphagus cyanocephalus (Wagler)	Brewer's blackbird	Local (recent) summer resident from West	Mar-Nov (winter)	Marshes, wet fields	Plant and animal matter
Quiscalus quiscula (Linnaeus)	Common grackle	Abundant transient and summer resident	Mar-Nov (winter)	Open places everywhere	Plant and animal matter
Molothrus ater (Boddaert)	Brown-headed cowbird	Common to abundant summer resident	Mar-Nov (winter)	Open places, woods	Plant and animal matter
THRAUPIDAE	TANAGERS				
Piranga olivacea (Gmelin)	Scarlet tanager	Common summer resident, less common in north	Early May-Oct	Woods, especially oak	Insects, fruit
FRINGILLIDAE	GROSBEAKS, BUNTINGS, FINCHES, SPARROWS				
Cardinalis cardinalis (Linnaeus)	Cardinal	Common permanent resident in south	Jan-Dec	Suburbs, swamps, *etc.*	Seeds, fruit
Pheucticus ludovicianus (Linnaeus)	Rose-breasted grosbeak	Common summer resident throughout	Early May-Sep	Woods, borders	Insects, seeds
Passerina cyanea (Linnaeus)	Indigo bunting	Common summer resident less common in north	Early May-Sep	Roadsides, borders	Insects
Spiza americana (Gmelin)	Dickcissel	Irregular local summer resident, especially southwest	May-Sep	Fields, fencerows	Insects, seeds

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
FRINGILLIDAE (contd.)	GROSBEAKS, BUNTINGS, FINCHES, SPARROWS				
Hesperiphona vespertina (Cooper)	Evening grosbeak	Common winter visitor, summer resident in north	Jan-Dec	Woods, borders, feeders	Seeds
Carpodacus purpureus (Gmelin)	Purple finch	Common summer resident in north, winter visitor in south	Jan-Dec	Woods, bogs, feeders	Seeds
Pinicola enucleator (Linnaeus)	Pine grosbeak	Uncommon winter visitor	Dec-Mar	Woods, plantations	Buds, fruit
Carduelis flammea (Linnaeus)	Common redpoll	Common (irregular) winter visitor, summer resident in north	Nov-Apr	Fields, borders	Seeds
Carduelis pinus (Wilson)	Pine siskin	Common (irregular) winter visitor, summer resident in north	Jan-Dec	Willows, alders, *etc.*	Catkins, seeds
Carduelis tristis (Linnaeus)	American goldfinch	Common permanent resident	Jan-Dec	Borders, woods	Seeds
Loxia curvirostra Linnaeus	Red crossbill	Irregular winter visitor, summer resident in north	Jan-Dec	Coniferous stands	Buds, seeds
Loxia leucoptera Gmelin	White-winged crossbill	Irregular winter visitor, summer resident in north	Jan-Dec	Coniferous stands	Buds, seeds
Pipilo erythrophthalmus (Linnaeus)	Rufous-sided towhee	Common summer resident, less common in north	Mar-Nov (winter)	Thickets, borders	Insects, seeds
Passerculus sandwichensis (Gmelin)	Savannah sparrow	Common summer resident throughout	Apr-Oct	Fields	Insects, seeds
Ammodramus savannarum (Gmelin)	Grasshopper sparrow	Uncommon summer resident in south	Late Apr-Sep	Fields	Insects, seeds
Ammodramus henslowii (Audubon)	Henslow's sparrow	Uncommon summer resident in south	Late Apr-Sep	Fields	Insects, seeds
Ammospiza leconteii (Audubon)	Le Conte's sparrow	Rare transient and local summer resident in north	Apr-Oct	Wet fields, marshes	Insects, seeds
Ammospiza caudacuta (Gmelin)	Sharp-tailed sparrow	Rare or overlooked transient	Apr-Oct	Marshes	Insects, seeds
Pooecetes gramineus (Gmelin)	Vesper sparrow	Common summer resident throughout	Early Apr-Nov (winter)	Fields, pastures	Insects, seeds
Chondestes grammacus (Say)	Lark sparrow	Rare and local summer resident	Summer	Fields	Insects, seeds

Table 4. contd.

Scientific Name	*Common Name*	*Status***	*Season of Occurrence*†	*Habitat*	*Chief Food*
FRINGILLIDAE (contd.)	GROSBEAKS, BUNTINGS, FINCHES, SPARROWS				
Junco hyemalis (Linnaeus)	Dark-eyed junco	Common transient and summer visitor, summer resident in north	Jan-Dec	Fields, borders	Insects, seeds
Spizella arborea (Wilson)	Tree sparrow	Common winter resident, especially south	Oct-Apr	Fields, borders	Insects, seeds
Spizella passerina (Bechstein)	Chipping sparrow	Common summer resident throughout	Mid-Apr to Nov	Suburbs, gardens, *etc.*	Insects, seeds
Spizella pallida (Swainson)	Clay-colored sparrow	Uncommon local summer resident in north	May-Sep	Brushland, burns	Insects, seeds
Spizella pusilla (Wilson)	Field sparrow	Common summer resident, less common in north	Early Apr-Nov (winter)	Fields, brushland	Insects, seeds
Zonotrichia querula (Nuttall)	Harris' sparrow	Rare transient	Spring, fall	Borders	Insects, seeds
Zonotrichia leucophrys (Forster)	White-crowned sparrow	Common transient, rare winter resident	Apr, Oct (winter)	Borders, thickets	Insects, seeds
Zonotrichia albicollis (Gmelin)	White-throated sparrow	Common transient and summer resident in north, uncommon winter resident in south	Apr-Oct (winter)	Woods, swamps	Insects, seeds
Passerella iliaca (Merrem)	Fox sparrow	Regular transient	Apr-Nov (winter)	Borders, thickets	Insects, seeds
Melospiza lincolnii (Audubon)	Lincoln's sparrow	Uncommon transient, rare summer resident in north	May-Oct	Borders, bogs, jack pines	Insects, seeds
Melospiza georgiana (Latham)	Swamp sparrow	Common summer resident	Apr-Oct (winter)	Swamps, marshes	Insects, seeds
Melospiza melodia (Wilson)	Song sparrow	Common summer resident, permanent resident in south	Jan-Dec	Borders, fencerows	Insects, seeds
Calcarius lapponicus (Linnaeus)	Lapland longspur	Irregular transient and winter visitor	Late Oct-Mar	Fields, beaches	Insects, seeds
Plectrophenax nivalis (Linnaeus)	Snow bunting	Common (irregular) winter visitor, especially in north	Nov-Apr	Fields, roadsides	Insects, seeds

* *Birds recorded in the Basin less than five times in the past 100 years have been omitted.*

** *For definition of terms, see the Appendix (p. 95).*

† *Definition of seasons: winter = Dec, Jan, Feb.; spring = Mar, Apr, May; summer = Jun, Jul, Aug; autumn = Sep, Oct, Nov. A season in parenthesis, e.g. (winter), means that the species is found irregularly in that season.*

EXTINCT, EXTIRPATED, AND INTRODUCED SPECIES

A list of extinct, extirpated, and introduced birds of the Lake Michigan Drainage Basin is presented in Table 5. The list will likely grow in the future if care is not taken to protect birds which are now severely affected by habitat destruction and other human disturbances.

Table 5. Extinct, Extirpated, and Introduced Birds of the Lake Michigan Drainage Basin

Scientific Name	*Common Name*	*Comments*
ANATIDAE	SWANS, GEESE, DUCKS	
Cygnus olor (Gmelin)	Mute swan	Introduced on the Jordan River about 20 years ago; now widespread in the Grand Traverse Bay area (several hundred birds) and becoming established in other Michigan areas.
Olor buccinator (Richardson)	Trumpeter swan	Extirpated. Once common (?) (bones in Indian middens), the last birds disappeared from the Basin in the late 1800's. Captive birds in sanctuaries and parks, but no wild birds extant in the Basin.
TETRAONIDAE	GROUSE	
Lagopus lagopus (Linnaeus)	Willow ptarmigan	Believed to have occurred in the northern part of the Basin in the past, but records uncertain. Releases have failed in the Upper Peninsula of Michigan; some supposedly migrated south into Wisconsin and disappeared.
PHASIANIDAE	QUAILS, PHEASANTS	
Perdix perdix (Linnaeus)	Gray partridge	Releases in the Basin seemed to have become established in the mid-1900's and were augmented by birds moving in from Ohio, but most recent records are probably escapees from captivity.
MELEAGRIDIDAE	TURKEYS	
Meleagris gallopavo Linnaeus	Wild turkey	Wild stock extirpated before 1900, but successful reintroductions have been made in several areas in Michigan (*e.g.* Allegan, Gladwin, and Oscoda counties) and Wisconsin.
SCOLOPACIDAE	SANDPIPERS, ALLIES	
Numenius borealis (Forster)	Eskimo curlew	Extirpated. Formerly a rare transient. (Only extant Michigan specimen was collected on 28 October 1879 near Kalamazoo.)
COLUMBIDAE	PIGEONS, DOVES	
Ectopistes migratorius (Linnaeus)	Passenger pigeon	Extinct. Last Michigan specimen (outside Basin) taken in 1898, the last Wisconsin specimen in 1899. Once nested in both states by the millions (Schorger, 1955).
PSITTACIDAE	PARROTS, MACAWS	
Conuropsis carolinensis (Linnaeus)	Carolina parakeet	Extinct. Early records from Wisconsin and Illinois (McKinley, 1965) and a dubious report of one from St. Joseph County in Michigan (McKinley, 1977), but the species became extinct in the early 1900's.
Myiopsitta monachus (Boddaert)	Monk parakeet	A recent record of this escaped alien (from South America, especially Argentina) in the fruit district of Berrien County, Michigan, raises fears that it may become established in the Basin, as it has in the eastern states. It could become exceedingly destructive to fruit and grain crops.
STURNIDAE	STARLINGS	
Sturnus vulgaris Linnaeus	Starling	This alien, introduced into New York City in 1890, reached Michigan in 1924 and has since become one of the Basin's most abundant and undesirable residents.
PLOCEIDAE	WEAVER FINCHES	
Passer domesticus (Linnaeus)	House sparrow	Releases in Michigan in the 1870's soon caused its permanent establishment. Now this sparrow is one of the Basin's most abundant and uncontrollable pests.

ENDANGERED, THREATENED, AND DECLINING SPECIES

The terminology and status of rare and endangered species is under constant review; hence the species and status designations given in Table 6 are tentative. In general, *endangered* means in danger of extinction throughout all or a significant portion of the range, and *threatened* means any native resident species not holding its own (Wisconsin) or likely to become endangered as a breeding population in the near future (Michigan). Other somewhat vague categories used are *declining, scarce* or *inconspicuous, peripheral,* and *rare* (the latter almost meaningless because it has been used in so many ways). Data on the birds in Table 6 are largely from the Wisconsin Department of Natural Resources Endangered Species Committee (1975), Wallace (1969), the Michigan Department of Natural Resources (1976), and the U. S. Department of the Interior, Fish and Wildlife Service (1976a).

Table 6. Endangered, Threatened, and Declining Birds of the Lake Michigan Drainage Basin

Scientific Name	*Common Name*	*Comments*
PHALACROCORACIDAE	CORMORANTS	
Phalacrocorax auritus (Lesson)	Double-crested cormorant	Listed as *endangered* in Wisconsin and *threatened* or *scarce* in Michigan (no breeding colonies in the Basin).
ARDEIDAE	HERONS, EGRETS, BITTERNS	
Nyticorax nyticorax (Linnaeus)	Black-crowned night heron	In Michigan, has declined from 12 colonies with more than 2000 nesting pairs prior to 1943 to practically no colonies in the 1970's. In the Basin, this species is not now known in Michigan, Indiana, or Illinois; three spring and summer observations were made in Wisconsin during 1974.
ACCIPITRIDAE	HAWKS, EAGLES, HARRIERS	
Accipiter cooperii (Bonaparte)	Cooper's hawk	Declining nearly everywhere. No known breeding sites in central Wisconsin from 1962 to 1970, but five territories found in 1971. Listed as *threatened* in both Wisconsin and Michigan.
Buteo lineatus (Gmelin)	Red-shouldered hawk	Listed as *threatened* in both Wisconsin and Michigan. Replaced by more tolerant red-tailed hawks in many woodlots.
Haliaeetus leucocephalus (Linnaeus)	Bald eagle	The southern race (*H. l. leucocephalus*) is considered *endangered* throughout the 48 contiguous states, although the northern race (*H. l. alascanus*) is nearly holding its own in parts of northern Michigan.
Circus cyaneus (Linnaeus)	Marsh hawk	Has declined severely in parts of Wisconsin (Buena Vista Marsh, Horicon Marsh, Lake Michigan) (see Hamerstrom, 1969). Wisconsin has given it *watch* status; on *threatened* list in Michigan.
PANDIONIDAE	OSPREYS	
Pandion haliaetus (Linnaeus)	Osprey	Listed as *endangered* in Wisconsin, *threatened* in Michigan. Worldwide in distribution, hence not endangered throughout its whole range.
FALCONIDAE	FALCONS	
Falco peregrinus Tunstall	Peregrine falcon	Endangered throughout the world. No active breeding sites left in eastern North America. Declining in the Rocky Mountains, Yukon, and Alaska.
TETRAONIDAE	GROUSE	
Tympanuchus cupido (Linnaeus)	Greater prairie chicken	Only one sizable colony left in Michigan (fewer than 30 breeding birds statewide). Doing better in central Wisconsin (estimated 2000 breeding birds). Listed as *threatened* in both Wisconsin and Michigan.
Pedioecetes phasianellus (Linnaeus)	Sharp-tailed grouse	Given *watch* status in Wisconsin; perhaps none left in the Wisconsin portion of the Basin. Doing better in Michigan (grassy openings being maintained by the Michigan Department of Natural Resources).

Table 6. contd.

Scientific Name	*Common Name*	*Comments*
PHASIANIDAE *Colinus virginianus* (Linnaeus)	QUAILS, PHEASANTS Bobwhite	In Wisconsin, most survivors are outside the Basin. Limited open seasons in Michigan.
RALLIDAE *Coturnicops noveboracensis* (Gmelin)	RAILS, GALLINULES, COOTS Yellow rail	Given *threatened* status in Wisconsin (perhaps none left in Basin). Not listed in Michigan categories but is very scarce, perhaps not breeding in Basin.
CHARADRIIDAE *Charadrius melodus* Ord	PLOVERS, TURNSTONES Piping plover	Apparently no breeding birds left along Lake Michigan shores in either Michigan or Wisconsin, except the few at Wilderness State Park in northern Michigan. Listed as *threatened* in Wisconsin and Michigan.
SCOLOPACIDAE *Bartramia longicauda* (Bechstein)	SANDPIPERS, ALLIES Upland sandpiper	Given *watch* status in Wisconsin; may be holding their own in both Michigan and Wisconsin.
TYTONIDAE *Tyto alba* (Scopoli)	BARN OWLS Barn owl	Declined from ten known nest sites in six counties in Michigan in the 1940's to none in the 1970's, but now breeding (in artificial nest sites) in Monroe County (outside Basin). A similar but less precipitous decline noted in Wisconsin where it is on *watch* status. Recent breeding records at Green Bay.
TYRANNIDAE *Sayornis phoebe* (Latham)	NEW WORLD FLYCATCHERS Eastern phoebe	Status not listed for either state, but a sharp decline took place in the 1950's. Slow recovery.
TROGLODYTIDAE *Thryomanes bewickii* (Audubon)	WRENS Bewick's wren	*Watch* status for Wisconsin, believed to have declined in the last ten years. Status not listed for Michigan (considered peripheral), but rarely recorded.
TURDIDAE *Sialia sialis* (Linnaeus)	THRUSHES Eastern bluebird	Has become *scarce* in Michigan; a sharp decline in the 1950's, some recovery. Similar situation for Wisconsin.
LANIIDAE *Lanius ludovicianus* Linnaeus	SHRIKES Loggerhead shrike	Very sharp decline in recent years, possibly no breeding birds left in the Basin. (Abundant in southern and southwestern states.)
PARULIDAE *Dendroica kirtlandii* (Baird)	WOOD WARBLERS Kirtland's warbler	No breeding birds known in Wisconsin, Illinois, or Indiana. One or two pairs in Wexford County, Michigan (in Basin). Entire 1975 world population (in a few counties in north-central Michigan) estimated at 179 pairs (Ryel, 1976); this has increased to 200 and 219 pairs in 1976 and 1977, respectively (Michigan Audubon Society bird surveys).

SUMMARY

This report on *Birds of the Lake Michigan Drainage Basin* discusses: avian resources in the Basin, including an annotated list of birds common to the Basin; major habitats and representative birds found in each; special areas such as state parks, wildlife refuges, and sanctuaries; problems of pollution, pesticides, and disease; and migration patterns and flyways.

The major habitats include (*i*) the Lake Michigan shoreline, with its attendant loons, grebes, waterfowl (ducks, geese, and swans), gulls, sandpipers, and other shoreline species; (*ii*) inland lakes, with their freshwater ducks, kingfishers, and spotted sandpipers; (*iii*) rivers and streams, with their characteristic avifauna (herons, river ducks, occasional eagles and ospreys, and the rare Louisiana waterthrush); (*iv*) marshes, with their wealth of birdlife; (*v*) fields and open spaces, with such birds as bobolinks, meadowlarks, horned larks, and several sparrow species; and (*vi*) woodlots of oak-hickory, beech-maple, and pine, which support about 80 different species of birds.

Special areas include (*i*) state parks (*e.g.* Wilderness) and national lakeshores (Sleeping Bear), (*ii*) wildlife refuges (Seney in Michigan; Horicon in Wisconsin), (*iii*) sanctuaries operated by the Michigan Audubon Society, and (*iv*) special areas noted for birds, such as beaches along Lake Michigan, floodings, and the management areas set aside for the rare and endangered Kirtland's warbler. The birdlife in these special areas is described.

Some of the early history of birdlife in the Basin includes the extinction of the passenger pigeon, the extirpation and subsequent successful reintroduction of the wild turkey, and the sharp decline of the prairie chicken. The effects of early lumbering and land-clearing operations on birdlife have been the decline of forest birds and the increase in birds of open spaces. Pollution, especially in the basin waterways, and the unremitting use of pesticides have also affected the birdlife. The role of diseases includes the die-off of loons and other water birds from botulism, lead poisoning in ducks, and the various maladies affecting game birds and mourning doves.

Migration data characterize diurnal and nocturnal migrants, spring and fall migration patterns, the major routes and flyways, physical (external) and physiological (internal) factors influencing migration, and man-made obstacles to migration (such as ceilometers, TV towers, and overhead wires).

The more important species found in the Basin are described in an annotated list, and a table lists all of the species (except rare stragglers) known to occur. The table includes capsule data on each bird's seasonal status, abundance, habitats, and predominant food habits. There are also lists of extinct, extirpated, and introduced species and of endangered, threatened, and declining species.

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APPENDIX. DEFINITION OF TERMS

Birds are commonly divided into *status groups* based on their seasonal distribution, and these status groups are further qualified by such terms as *abundant, common, uncommon, rare,* or *accidental*. The following definitions and examples of status groups are from Wallace and Mahan (1975).

Permanent Residents.

Nonmigratory. Species present throughout the year in a given locality. Examples: game birds (grouse, pheasants, quail), some owls (great horned, barred, screech), some woodpeckers, some titmice, house sparrows, cardinals.

Migratory. Species present throughout the year in a given locality; however, within the species certain individuals are migratory. Examples: some ducks, some hawks, crows and jays, cedar waxwings, starlings, song sparrows.

Summer Residents. Species that arrive in the spring, remain for the summer (breeding), and leave in the fall. Includes nearly all summer birds which are not permanent residents.

Transients. Birds that pass through a given region during the spring and fall migration periods. Examples: Arctic-breeding ducks, shorebirds, and northern warblers.

Winter Residents or Visitants. Somewhat vaguely defined as birds that remain (or appear) in a given locality in winter. Some, like the tree sparrow, may arrive in the fall and remain in a small area all winter; others, often called erratic finches (redpolls, crossbills, grosbeaks), may appear in some winters for indeterminate periods or not occur at all in other winters.

Accidentals or Stragglers. Widely wandering or displaced birds, such as tropical species in the north, sea birds blown inland, or western species appearing rarely, or sometimes frequently, in the Midwest.

Abundant. Seen frequently in large numbers during the season, or seasons, when they are present. Example: starling.

Common. Seen regularly, but individuals often scattered, not in large flocks. Example: red-eyed vireo.

Uncommon. Seen infrequently, perhaps not every year. Example: Connecticut warbler.

Rare. Recorded at intervals of several years or less. Example: red-throated loon.

For the purposes of this report, the following geographical definitions have been adopted:

North, or Northern Part of the Basin. Construed to mean north of an imaginary line drawn from the lower tip of Saginaw Bay through Muskegon, in Michigan. Such an arbitrary line extended across Lake Michigan approximates the political boundary of Wisconsin and Illinois, making the north-south distinction unnecessary west of the Lake.

South, or Southern Part of the Basin. South of the same line.

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Diet: Seeds, tubers, and foliage of aquatic plants obtained by uprooting plants and sieving out edible portions.

Comments: Have been increasing and spreading (in areas in southern Michigan), but many died in severe winter of 1977.

Olor columbianus (Ord). WHISTLING SWAN.

Status and Distribution: Regular transient, March-April and October-November. Large flocks occur sometimes, but mostly east of the Basin (Saginaw Bay). Formerly thousands stopped in Green Bay, Wisconsin, but apparently changing vegetation in the bay has greatly reduced the flocks in recent years (Kjos, 1975--personal communication). A few remain over winter in southern parts of the Basin.

Diet: Mainly vegetable matter obtained by uprooting aquatic plants or by foraging in fields.

Branta canadensis (Linnaeus). CANADA GOOSE.

Status and Distribution: Common transient, often in large flocks. Strictly wild birds that formerly nested in the Basin, probably extirpated long ago. Have been widely reestablished by rearing and stocking pinioned birds and allowing young to scatter.

Diet: Chiefly grazers on aquatic plants and on grains and succulent plants in fields.

Comments: Of considerable economic importance for game, but often cause severe damage to farm crops by feeding and trampling.

Anas platyrhynchos Linnaeus. MALLARD.

Status and Distribution: Common permanent resident, present in all seasons in considerable numbers although it is migratory.

Diet: A dabbling duck which feeds largely on aquatic plants in the water and on seeds and grain in fields. Young ducklings feed largely on insects gleaned from the surface of the water.

Comments: Since mallards are probably the most common species in hunters' bags, they are of great economic importance.

Anas rubripes Brewster. BLACK DUCK.

Status and Distribution: Formerly said to be "the most abundant breeding duck" in Michigan (Zimmerman and Van Tyne, 1959), now uncommon. Reasons for decline not clear.

Diet: Approximately 75% vegetable matter with grasses, sedges, and seeds the major food items (Kortright, 1967).

Comments: The black duck is a more wary duck than the mallard, which is easily domesticated.

Anas acuta Linnaeus. PINTAIL.

Status and Distribution: Generally abundant transient, a few breeding in some northern counties and wintering locally in southern parts of the Basin. (The main population breeds north to Alaska and winters south to South America.)

Diet: Feeds mainly on parts of aquatic plants (seeds, tubers, and succulent parts), but secures some animals by sieving bottom debris.

Anas discors Linnaeus. BLUE-WINGED TEAL.

Status and Distribution: Common transient and summer resident, probably the most common breeding duck in southern Michigan. Less common in the northern counties. Has been reported in Michigan in winter, but 90% of the population winters south of the Texas-Mexico border. It is the most common duck in hunters' bags in Colombia, South America, where there is no closed season.

Diet: Feeds mainly on vegetation, with some animal matter. Unlike most surface-feeding ducks, it rarely tips up tail and feet while feeding (Kortright, 1967).

Anas clypeata (Linnaeus). NORTHERN SHOVELER.

Status and Distribution: Uncommon transient, nesting in scattered localities, especially in southeastern Wisconsin. Occasional winter visitor.

Diet: Largely vegetation. The lamellae or comblike ridges on the mandibles of ducks reach their highest development in the shoveler, which is more of a surface feeder than other ducks. Also does considerable shoveling of the mud in shallow water, using strainer plates (lamellae) in its mandibles to sift out the edible portion in the debris.

Anas americana (Gmelin). AMERICAN WIGEON OR BALDPATE.

Status and Distribution: Common transient. Breeds irregularly in scattered localities and can be found in winter in southern parts of the Basin.

Diet: Largely vegetation.

Comments: The American wigeon is more consistently herbivorous than most other ducks; hence, it is choice eating and of considerable economic importance since it is a common fall migrant.